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HYPERACTIVITY AND PERSONALITY CHARACTERISTICS OF GIRLS IN GRADES 4 AND 5

by

© M. JEAN WATT

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

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Supervisor

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. Paul C. Sartoris

. . . . . .

Date . 30. September, 1981 . .

TO MY SONS

Douglas Robert, in loving memory

and to

Andrew Nicholas, my younger son,

raison d'être and encouragement

ABSTRACT

The purpose of this study was to test the assumption underlying the association of hyperactivity in girls, in grades 4 and 5, with their personality characteristics, and to consider the influence of self concept and academic achievement among hyperactive and nonhyperactive female students. As such it sought to examine the relationship between hyperactivity and extraversion, neuroticism, lie scale, psychoticism, and the self perception of girls, on the one hand, and on the other, to investigate the difference in school achievement between study/listening skills and reading. Additional data was collected using behavioral and timed events procedures.

Two hundred and twenty-six girls were randomly assigned from three elementary schools equally matched in grade, social status and area of residence in Edmonton. All participants, teachers, examiners and observers were uninformed as to which children were in the study and its purpose. The 20 identified hyperactive girls demonstrated a positive correlation between the personality factor "psychoticism" and hyperactivity. This finding suggests that the hyperactive girls would better respond to structure in education than those not so identified.

Hyperactive girls did not differ significantly from controls on other factors. There appeared many interesting intercorrelations between personality variables, self concept and hyperactivity which require further study.

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CHAPTER I

Introduction

In what ways do hyperactive girls differ from girls that are not hyperactive? Do differences in personality characteristics and self concept predispose the hyperactive girls to react to their world rather than rationally controlling their actions from within?

The hyperactive child is defined by Ross and Ross (1976) as one who exhibits a high level of activity and is unable to inhibit his activity level on command. Conners (1969) more specifically described hyperactivity as excessive chronic high activity levels, short attention span, impulsivity and distractibility.

While the population of hyperactive children includes both girls and boys a far greater proportion of boys is found to be hyperactive. The reported ratios are as high as 9:1 (Prinz and Loney, 1974). An abundance of literature exists concerning studies with boys. Many studies present combined results for boys and girls. Generalizations from such studies allow little interpretation or extrapolation with respect to hyperactive girls.

This study looks at differences in the personality structure, behavior, self perception and school performance of hyperactive and normal girls. The measures adopted were

the Eysenck Personality Questionnaire (Junior Form), the Conners' Abbreviated Teacher Rating Scale - to measure behavior, and the Piers-Harris Children's Self Concept Scale. The school achievement of hyperactive and normal girls was studied using the Step III Study/Listening Skills Test. An additional unobstrusive reading skills measure was obtained from a system-wide test score located in school cumulative records.

From a theoretical perspective, the Eysenck personality factors and Conners' behavioral measure are compatible. In these measures behavior of both boys and girls is characterized by high activity levels, impulsive actions, brevity of attention span, restlessness and distractibility, rapid and drastic mood changes, and by temper outbursts accompanied by explosive and unpredictable behavior. Consequently, a personality hypothesis of extraversion-introversion and hyperactivity, of emotionality and hyperactivity, and of the relationship of tough-mindedness and hyperactivity should be pursued.

Three etiological models of hyperactivity, the deficit, delay and difference models were reviewed by Kinsbourne (1975). The difference model was chosen as the basis on which to relate hyperactivity and personality characteristics.

1. The Deficit Model

The deficit model states that due to early brain damage some children are unable to develop particular skills; because of this brain-based deficit they manifest hyperactive behavior. Children with damage to the brainstem, or frontal lobe, and children who are afflicted at an early age with encephalitis have been observed to exhibit behaviors similar to those of hyperactive children without a medical history of brain damage.

2. The Delay Model

The delay model attributes hyperactivity to a delay in cognitive development that produces a developmental lag in whatever function appears to be deficient. Initially, hyperactive behavior in children was associated with immaturity and it was speculated some hyperactives would spontaneously mature in adolescence. Recent studies indicate such is not the case. In some instances the disorder appears to persist; however, the symptom of hyperactivity is then observed to be expressed in various age-appropriate forms (Stewart, Pitts, Craig and Dieruf, 1966).

3. The Difference Model

The third view on the nature of hyperactivity is the difference model which conceptualizes hyperactive actions as extreme forms of underlying dimensions of behavior. This

model recognizes a variety of stable personality types or temperaments based on genetic diversity. Buss and Plomin (1975) suggest that when a person occupies an extreme position in terms of one of any four basic temperaments (impulsivity, socialibility, activity and emotionality) their resulting behavior may be maladaptive for daily living. Hyperactive children appear to behave impulsively, frequently, such that they are at risk for failure in school. The difference model best allows for investigation of differences between hyperactive and nonhyperactive girls.

An individual difference and personality approach to hyperactive behavior would appear to be consistent with Kinsbourne's (1975) difference model on the origin of hyperactivity. If hyperactive behavior is an extreme form of an underlying dimension of behavior, then the effect of each unique interaction between personality and individual differences would help account for those differences between hyperactive and nonhyperactive girls in achievement, self concept and variable behavior from early childhood to adult years.

Should the hypothesis of a relationship between hyperactivity and personality be confirmed, there would follow implications for counselling and educational management programs for hyperactive children.

This research project was designed to investigate the following questions:

1. Is hyperactive behavior in girls positively and significantly related to extraversion?

2. What is the measured degree of emotionality in hyperactive and normal girls?

3. What is the tendency of hyperactive and normal girls to provide socially acceptable responses as measured by the Lie Scale? Are these tendencies significantly different?

4. Does a positive and significant relationship exist between hyperactivity and tough-mindedness in girls?

5. Do hyperactive girls differ significantly from normal girls with regard to self concept?

6. Is the school achievement as measured of hyperactive girls significantly lower than that of non-hyperactive girls?

CHAPTER II

Review of Literature

Activity Level

1. Etiology

One of the predominant characteristics of the disorder of hyperactivity is persistent excessive activity in situations requiring motor inhibition. Activity level is cited as the primary characteristic associated with hyperactivity in over 40 major articles reviewed by Schrager, Lindy, Harrison, McDermott and Wilson, 1966. Lewis' (1963) description of the characteristics and its importance includes ". . . jumps around often and unexpectedly . . . highly distractible so that his attention jumps around too . . . seems to have few restraints . . . these children are born without brakes, and once the impulse starts they keep on reacting . . . tends to be hyperactive, disinhibited and impulsive."

Among the variables which confound researchers are identification of the neurological centres responsible for activity level; the variety of bodily states which affect activity level, for example, sleep and wakefulness; effect of stimulus and environment; identification of factors to be measured; measurement, instrumentation and observer differences. Although the relationship between activity levels and these

variables has yet to be established, consideration of other factors such as personality characteristics and sex may be undertaken.

The question of the inability to inhibit motor activity on command is being approached through several differing theories. One group of theories infers brain damage. According to Strauss and Lehtinen (1947) there is a five-stage process requiring the brain to complete the undisturbed cycle of incoming stimulus impulses and output of a motor response. They propose that a set of intervening events occur between the reception of stimuli and execution of the motor response. This physiological interruption produces a deficit in performance at the interrupted stage; therefore, the full amount of energy required by all five stages is not spent. The excess energy results in over-activity. They conclude that deficits in motor execution, perception, and development of perseverative responses reflect neurological defects in one or more of the five stages.

Another theory associates excess activity with the malfunctioning of motor neurons. The motor neuron theory proposes that high activity level results from atypical neuronal discharge, whereas predictable levels of activity are a function of normal motor neuron firing. Neurophysiological studies explain activity in terms of deficits in the relationship between the visual motor, auditory motor,

visual autonomic and auditory autonomic receptor-effector systems (Gellner, 1959).

Stored excess energy is also expressed as the "overuse" of the motor-touch association system by children unsuccessful in making a natural progression from the tactile to the verbal exploration of environment (Zaporozhet, 1957, 1960). Some youngsters exhibit a developmental lag in progressing from the physical investigation to the verbal inquiry and ordering of their world. Their overactive behavior is viewed as a compensatory behavior for the physiological interruption. The failure to successfully discriminate between relevant and irrelevant behavior responses independent of any other internal complaint is hypothesized as a source of hyperactivity (Bindra, 1961).

2. Current Research

Kaspar's theories integrate the simultaneous interaction of internal physiological processes and social variables. Kaspar (1971, 72, 73, 74) defines hyperactivity as a deficit in the ability to shift activity level upward or downward rather than as an unalterable body state. According to Kaspar each person possesses a homeostatic central mechanism for activity level that regulates the activity level from "highly active" to "passive" behaviors, as demanded by the characteristics of the situation. Individual behavior ideally averages to an optimal activity level.

Kaspar's studies with brain-injured youngsters have shown a deficit in the body's ability to regulate activity level. The major difficulty for these children lies in shifting their activity level downward.

Hyperactive youngsters apparently experience little difficulty in increasing their activity level. When situational demands require a decrease in activity, an increase in bodily activity is frequently observed. Comparing groups of hyperactive and nonhyperactive youngsters on a speed tapping test under incentive and non-incentive conditions, Stevens, Stover and Backus (1970) found that hyperactive children maintained a moderately fast response tempo, whereas, nonhyperactive children shifted response tempo downward and upward with ease. Villa Blanca (1972, 1974a,b), Villa Blanca and Marcus (1972, 73, 74b) investigated hyperactivity through physiological research of the reticular activating system. In animals the nervous pathways of the ascending tracts of the reticular activating system control arousal and the descending tracts provide an inhibitory influence. Villa Blanca speculates that in human behavior the hyperactive child's ascending tracts function properly; however, some disturbance or impairment in the descending tracts prevents a downward shift and allows overactivity.

3. Measurement of Activity Level

A review of literature on measurement of activity level indicates that due to limited research very little is known about the nature of activity. Development of a reliable and valid measure appears to be plagued by inconsistent operational definitions of activity and by the failure of mechanical and observation procedures in controlling for variables. Activity level is assessed on two dimensions: the quantitative, and the qualitative or situationally appropriate aspects of daily motor behavior. It is the qualitative aspect of activity level that distinguishes the hyperactive child from the normal child. Scales distinguishing the hyperactive child's behaviors as qualitative discrete events would provide the template for understanding the behavior of girls and boys.

Attention

Hyperactive children are frequently described by teachers and parents as having extremely short attention spans in terms of their capacity to concentrate on one activity. Hyperactive youngsters appear to be easily distracted from errands or tasks by environmental stimuli which most children have the capacity to exclude. This common concept equates attention span with attention and suggests that "span" is attention. Attention is commonly generalized to infer the length of time spent at a given task.

Alabisco (1977) argues against this concept. He describes attention not as a unitary process regarded as a mental faculty. Rather, attention is a concept embracing attention span, focus of attention and selective attention. Alabisco (1977) and Reeves (1973) propose that children with unimpaired attention spend adequate amounts of time on tasks, demonstrate ability to focus on relevant characteristics of the stimulus presented, and make intricate two-stage stimulus discriminations.

Disorders of attention in the schoolroom reduce the number of effective learning experiences for the hyperactive child. Garner, Percy and Lawson's (1971) research categorizing children's behavior uses three basic classifications (task or oriented behavior, administrative time, and non-attentive behavior) with girls and boys classified as low or high on behavioral impulsivity. The non-attentive behavior of the hyperactive children comprised whispering, fighting, talking and daydreaming. Administrative tasks were not well executed by hyperactive students (passing out school materials, tidying up). Garner reports a 5 percent difference in attention means between the high and low groups, means of girls were 65 percent and 70 percent, for boys 61 percent and 66 percent.

Garner also observes that girls and boys with high and low attention times have lower Wechsler Intelligence Scale for Children scores than the children with intermediate

attention whose scores represented the optimal "on task" time. He suggests that the relationship of low performance to high attention scores signifies a tendency to remain at a task beyond the point where learning takes place. Low attention is related to low performance since it fails to engage the impulsive child in learning activities. From these findings Garner suggests that active girls and passive boys attend for optimal amounts in learning situations. Active boys under-attend and passive girls over-attend. Garner further speculates that differences in levels of task attention may, in part, be influenced by the transmission of normative cultural expectations for girls and boys.

Werry and Quay (1971) and Trites (1979) report a higher prevalence of inattentive behavior in boys than in girls. Werry and Quay administered the Quay-Peterson problem checklist surveying 55 behavior symptoms in 926 younger elementary boys and 827 girls. Their study indicates that 36 symptoms of high frequency were associated with boys; amongst these behaviors were: short attention span, inattentiveness to what others say, preoccupation "in a world of his own", negativism or the tendency to do the opposite of what is requested, and excessive daydreaming. The five most frequent behaviors in girls indicate a slight excess of neurotic type symptoms; however, girls acted-out less frequently than boys.

Trites' study of Canadian children in the Ottawa area (1976-78), using the Conners' Teacher Rating Scale to identify hyperactive children, notes important sex differences on all factor scores. The higher means for the inattentive-passive factor in males (0.63), compared with females (0.41), are stable across all ages, indicating that girls were more attentive than boys.

The review of literature on attention behaviors in hyperactive children indicates that differences do exist between girls and boys with regard to attention span, focus of attention, and selective attention. Girls were found to display greater attention in learning situations.

Impulsivity

The relationship between hyperactivity and impulsivity first reviewed by Murray (1938) concludes that impulsivity involves the tendency to respond rapidly without reflection. Research on impulsivity has increased; however, there is no single definition of impulsivity. Impulsivity has been viewed as: a constellation of behaviors and personality traits (Hirschfield 1965); an extreme position in terms of one of the four basic temperaments (Buss and Plomin, 1975); a term to designate high levels of undirected activity and the inability to inhibit or delay behavior that is incompatible with goal-directed behavior (Maccoby, 1966); the adaptive response to environmental stimuli which causes failure to take

sufficient forethought before acting (Schwebel and Bernstein, 1970); as the cognitive style "reflection-impulsivity" clarifying the relationship between the child's decision time, cognitive tempo, and the quality of his performance when he faces solving a problem characterized by a variety of solution alternatives (Kagan, Rosman, Day, Albert and Phillips, 1964); and fixation at an immature level in the development of verbal mediation abilities (Meichenbaum and Goodman, 1971).

The relationship of gender to impulsivity is noted in several studies. Differences exist between boys and girls in behavioral impulsivity, impulse control, and cognitive style.

Garner, Percy and Lawson (1971) studied 50 elementary girls and 55 boys by examining the relationship between gender, intelligence and cognitive style. They adopted an observation schedule and administered subtests of the WISC. Results indicated a positive correlation between intelligence and a high level of behavioral impulsivity in girls. Low levels of behavioral impulsivity were negatively correlated with intelligence. In male students, high levels of behavioral activity correlated negatively with heightened intelligence, and low levels of behavioral impulsivity correlated positively with intelligence. They concluded that active girls and inactive boys tend to be more reflective, and that in girls, the increase in behavioral impulsivity is accompanied by increased intellectual

activity.

Differences in impulse control are recorded between hyperactive and control groups of girls, and between impulsive boys and girls. Prinz and Loney (1974) rated girls on a teacher-rated five-point scale of impulse control describing 15 behavioral categories. The 16 hyperactive girls were divided into two groups, eight girls in grades one through three, and eight in grades four to six. Hyperactive girls rated significantly lower than control groups, and demonstrated marked differences in ability to control impulses.

Kagan, et al., (1964) working with a Fels longitudinal study on the use of analytic concepts in a grouping test and emotional control test reports a positive correlation .45 for boys and a negative correlation for girls -.20. These studies found that attentiveness in planning, a characteristic of reflective cognitive style, has a positive effect on academic performance in male subjects. The same variable appears to produce a negative effect on the performance of girls. Kagan concluded that girls tend to perform better on standardized tests when they become more impulsive; whereas boys improve on the same task when they become somewhat more reflective.

Distractibility

Distractibility is the term frequently used to describe a central behavior characteristic of hyperactive children who are not able to persevere with homework and classwork, who are easily diverted from projects by extraneous stimuli and who are unable to listen to a story or participate in table games and group activity for any length of time.

According to Alabisco (1977), confusion regarding a satisfactory definition has developed from the synonymous use of distractibility as inattention, and from referral to this phenomenon as a response to irrelevant stimuli. Alabisco argues that a child may demonstrate an adequate attention span and yet fail to execute the two-stage discrimination response required by selective attention. Although such performance during a selective attention task is rather poor, the child should not be described as distractible.

Recent research by Kaspar and Kasaba (1975) sought to develop an operational definition of distractibility based on a biosocial phenomenon involving the interaction between the child's capacity to attend and the characteristics of the child's environment. They defined distractibility as "the child's internal ability to control his immediate

interactions with the environment . . . a child is considered distractible when he does not attend to the stimuli that the adult who is in a controlling relationship to him feels he should attend" (p. 8).

This interpretation is food for thought for teachers and parents of hyperactive children. It illustrates possible differences between the social expectations of adults and children and the child's response to environmental change.

Kaspar et al., (1971) used four measures of distractibility involving visual and auditory discrimination tasks. These instruments were developed to appeal to children and differ according to the type of sensory input and sensory output required by the task. The instruments measured deficits in auditory and visual reception and motor and verbal expression. Twelve girls and 24 boys between five and eight years of age with a diagnosis of minimal brain dysfunction participated with a matched control group in a study examining the relationship between distractibility, activity level and neurological evidence of brain damage. The findings showed significant differences between female and male subjects on three out of four measures and suggested that brain-damaged females are less distractible than brain-damaged males. Kaspar et al., concluded that the only meaningful construct of distractibility is one that accommodates visual distractibility and auditory distractibility as separate entities.

Intelligence

One important focus of research with hyperactive children centres on their performance at school, particularly in intelligence, academic achievement and cognitive skills. One major concern is whether hyperactive students have a lower IQ and/or a lower level of scholastic achievement when compared with other children. The probability of accurately assessing their capabilities is assumed to be lowered due to their short attention span, lack of confidence and expectation of failure. It appears that these negative characteristics, common in hyperactive children, produce detrimental effects during the required demonstration of skill in testing situations regardless of the children's innate intelligence (Ross & Ross, 1976). Kagan (1965b) reports that highly impulsive children are as likely to be of high intelligence as low intelligence.

Trites (1979) found that more than 9 percent of children who rated as hyperactive were also above average in learning capacity. When the data was examined by sex, 4.2 percent of hyperactive girls were noted as above average capacity, 7.7 percent score as average, and 14.6 percent were recorded as below average. In contrast, 15.6 percent of boys rated above average, 20.0 percent appeared to be average, and 31.0 percent demonstrated below average capacity. One interesting trend observed from these ratings was that the

prevalence of behavior problems in all hyperactive children was lower when the children were higher in ability. Hyperactive girls with above average ability were less hyperactive, they presented fewer conduct problems, they were less tense and anxious, and scored lower on inattentive-passive measures than did girls with below average and average learning capacity. Trites' findings supported an earlier suggestion by Palkes and Stewart (1972) that although some hyperactive children appear to be of lower intelligence they may learn at a rate that is normal for their level of intelligence.

Prinz and Loney (1974) studying the possibility that hyperactive children do not initially differ in intellectual endowment found that the level of intellectual functioning drops across time. Results indicate younger hyperactive girls do not differ from their controls in IQ. However, older hyperactive girls appear to have lower IQs than control peers. In addition, older hyperactive girls presented lower IQs than the younger.

Differences were not observed between younger control and hyperactive girls on measures of self esteem. Results indicated that in the older population the self esteem of hyperactive girls was lower than that of controls. Prinz and Loney found that older hyperactive girls failed to show a rise in self esteem across age when compared with older nonhyperactive girls. It appears likely that the variables of self esteem and intelligence may be an influence on the

academic achievements of hyperactive girls.

Personality Theory

The concept of personality refers to certain enduring dispositions in the constitution of the individual. It is the basic reality nurturing or underlying important individual differences in behavior. Behavior may be described in terms of attitudes, habits, traits and types without necessarily satisfying the causal question: why is the individual behaving in a particular manner?

Eysenck Theory of Personality

Two very powerful and very influential dimensions of personality have been labelled by Eysenck (1947): extraversion-introversion, and neuroticism (or emotionality, or instability as opposed to normality or stability). Eysenck does not suggest that people are always as extreme in behavior as one or the other descriptions suggests; rather, most people fall into a middle area of the description.

A third major dimension, psychoticism, was hypothesized by H.J. Eysenck in 1952. Eysenck postulated that just as neurosis is a pathological exaggeration of high degree of some underlying trait of neuroticism, so psychosis is a pathological exaggeration of high degree of some underlying trait of psychoticism (Eysenck and Eysenck, 1975). In 1964 the "Lie" (L) scale to measure dissimulation was added to

Eysenck's instrument.

Eysenck states that all individuals occupy a position in the dimensions of extraversion-introversion, neuroticism and psychoticism. Individuals at the extreme end of the dimension whose behavior patterns exhibit a highly developed degree of disorder may appropriately be deemed neurotic, psychotic, extraverted or introverted.

Personality is defined by Eysenck as the more or less stable organization of a person's emotional, cognitive, intellectual, conceptual and physiological behavior which determines to a large extent his adjustments to environmental situations. Eysenck stresses that since human conduct is not specific but presents a certain amount of generality, conduct in one situation is predictable from conduct in other situations. Differing degrees of generality give rise to different levels of personality, thereby creating the hierarchical structure on which the dimension of extraversion-introversion is based. Eysenck concludes that personality is a powerful inward force, the most complete embodiment of wholeness in man. It is not merely a collection of sensations, motives and memories. Hence, these personality factors are important in any assessment of children.

A description of the Eysenck personality variables is presented to facilitate understanding the precise nature of the dimensions.

1. Extraversion and Introversion. Eysenck presents the typical extravert as an individual who craves excitement, takes chances, is sociable, is generally an impulsive person, is carefree, easy-going, optimistic, one who likes to "laugh and be merry". Extraverts tend to be aggressive and lose their temper quickly. Their feelings are not tightly controlled and they are not always reliable.

In contrast, the introvert is generally reliable, his feelings are under close control and he seldom is aggressive. Introverts prefer a well-ordered mode of life, they are serious about everyday matters, they distrust the impulse of the moment and plan ahead before acting. They are given to introspection and are rather quiet.

2. Neuroticism (Emotionality). The emotional control governing individual behavior ranges from emotional stability to emotional instability. The typical, highly neurotic person is likely to appear worried, anxious, moody and frequently depressed. He suffers from various psychosomatic disorders and sleeps poorly. Neurotic individuals tend to be overly emotional, they react very strongly to all manner of stimuli and experience difficulty settling down after an emotionally arousing experience. Frequently such strong emotional reactions lead to rigid and irrational behavior. The typical term to describe the neurotic is "worrier".

When extraversion and neuroticism interact, a neurotic extravert develops. This person will tend to be restless and touchy, excitable and possibly aggressive. In contrast, stable extraverts respond emotionally in a weak and slow manner and return to baseline quickly after being emotionally aroused.

3. Psychoticism (Tough-Mindedness). Eysenck's concept of psychoticism overlaps with three psychiatric diagnostic terms: psychopathic , schizoid and behavior disorders . The term "tough-minded" is used synonomously with psychoticism by Eysenck. Tough-minded children are described as glacial and lacking in human feelings for fellow-being and for animals, aggressive and hostile, even to people that care about them. These children seek to accommodate their lack of feeling for others by indulging in sensation-seeking "arousal jags" with little thought to the consequences or dangers associated with their activity. According to Eysenck, socialization is a relatively alien concept to tough-minded children and adults. Feelings of guilt, empathy and sensitivity to others are unfamiliar to them.

4. Lie Scale. Eysenck developed the "Lie" or falsification scale to detect intentional response distortion by individuals seeking to keep responses within the levels of social desirability where such a tendency would seem appropriate. In older individuals a common example may be

found in their responses as part of an employment interview.

In approaching the problem of causal agents responsible for behavior patterns, Eysenck states both heredity and environmental factors must be scrutinized. Although heredity does greatly determine personality, personality is significantly affected by environemtnal factors.

Self Concept

Self concept is the private language and sense of personal integrity we use to describe ouselves. American psychiatrist Harry Stack Sullivan (1953) maintained that the person's conception of himself emerges from the reflected appraisals of other significant persons. Development of self concept begins in infancy. When parents and significant others communicate positive feelings through the process of empathy, and are comforting and loving, the child develops positive feelings about himself.

A negative self concept is implanted by negative appraisals during any developmental stage. Sullivan writes that the negative child tends to see in others what he sees in himself, and attempts to reconcile in himself that others are as bad as he deeply perceives himself to be.

The reflected appraisals are instrumental in shaping behavior and strongly influence educational outcome. In a recent study by Eysenck (1981) comprehensive school students in London, 306 girls and 101 boys, completed the self report

JEPQ and an Antisocial Behavior Scale. Intercorrelations suggest a strong link between the lack of empathy and anti-social behavior in children. Eysenck concluded that the emerging picture of the antisocial child is of an individual who is low on empathy, is exceptionally impulsive, who is somewhat extraverted and tough-minded. Girls, however, appeared to be more empathetic than boys (Eysenck and Eysenck, 1980).

In changing the self concept, literature indicates that a change in behavior precedes a change in attitude and self concept. Bandura (1969) emphasizes that the relative superiority of a behaviorally oriented approach stems from the fact that a basic change in behavior provides an objective and genuine basis by which one feels self-respect, self-confidence, and dignity" (p. 91). Long-lasting behavioral changes will occur only if they are reality based. Therefore, it is doubtful that the low self concept commonly associated with profound physical disability would alter to reflect an accepting, positive attitude towards self unless it was reality based.

To what extent does self attitude affect educational outcomes? Generally, a negative self perception produces maladjustment and underachievement at school while a positive perception produces success. In our society overactive, restless children elicit negative reactions far more frequently from socialization agents than do inactive children (Ross

and Ross, 1976).

Negative self concepts of students who belong to minority groups and general group maladjustment based on skin colour also directly affect school performance (Hammill and Bartel, 1975). Gage and Berliner (1975) report a moderately high correlation (.72) between immaturity of self concept and reading disabilities in grade three. They infer that unsatisfactory examination results of high anxiety students may be associated with poor self concept.

In student populations there exist three hierarchically organized levels of self concept as illustrated in Appendix D, Figure 1. At the top of the figure Level 1 indicates those beliefs that are relatively difficult to modify, or the general self concept. Level II presents three major areas of self perception: the physical, social and scholastic. In Level III, the self concept is directly related to specific subject and concept areas. Concept areas relating to athletic ability or handsomeness are probably the least resistant to change. As an individual's improvement occurs in the specific areas it forms the basis for broader personal development towards the general self concept in Level I.

Students who effect behavior change may, in some instances, appear to initially reject their success experiences. Such change may reflect for them an incongruency

between self concept and experience (Gage and Berliner, 1975). Long-term behavioral change in high priority areas of concern will proffer a change in attitude and acceptance of self. Then the reflection will accord with reality and the hyperactive child will become aware of the powerful impact of positive reflected appraisals.

CHAPTER III

Research Design, Instruments and Procedures

This research project focused on the differences in patterns of school behavior, personality structure, and degree of self concept in a representative sample of females in grades four and five. The girls comprised three groups: hyperactive, highly active and control. The entire study was conducted blind. In like manner, all instruments were scored with the identities of experimental and control groups withheld until the study was completed. The schools participated in the initial phase of data collection unaware that special attention would be focused on hyperactive girls. A tandem observation of behavioral and timed events was simultaneously undertaken to further validate teacher identification of hyperactive children as presented in Appendix C. Administrative events presented chronologically appear in Appendix E.

The research project was designed to answer the following questions:

1. Is hyperactive behavior in girls positively and significantly related to extraversion?

2. What is the measured degree of emotionality in hyperactive and normal girls?

3. What is the tendency of hyperactive and normal girls to provide socially acceptable responses as measured by the Lie Scale? Are these tendencies significantly different?

4. Does a positive and significant relationship exist between tough-mindedness and hyperactivity in girls?

5. Do hyperactive girls differ significantly from normal girls with regard to self concept?

6. Is the school achievement as measured of hyperactive girls significantly lower than that of nonhyperactive girls?

Sample

The total representative sample comprised 226 female students, grade 4 through 6 drawn from regular classrooms in the Edmonton Public School system. Control criteria included chronological age 9 to 12 years and a verbal score of 85 or greater on the Canadian Cognitive Abilities Test. All girls had taken the group intelligence test as part of regular school routine prior to this study. The three schools represented afforded equal educational opportunity.

Participants in the study, teachers, examiners and observers were blind concerning which children were in the study and had no advance hypothesis about the composition or differences between groups. To reduce factors which might detract from the validity of findings and to elicit objective responses, teachers independently completed their

questionnaires under the supervision of a research assistant in a group setting.

The identification of experimental and control subjects proceeded through several stages. Letters to participate in the study were sent home to parents through the schools (Appendix A). The teacher reports, student testing and observation were simultaneously scheduled in the same time block between morning recess and lunchtime.

Upon completion of testing and application of scoring criteria, girls in grades 4 and 5 were assigned to hyperactive E_1, highly active E_2, and control C groups. The Conners' Abbreviated Teacher Rating Scale identified 20 girls as hyperactive (15 or more points). There remained, however, 14 girls with a combination of high CATRS (19-14) and high JEPQ scores. These comprised the E_2 (second experimental) groups. At this stage 22 controls were randomly chosen from the remainder of the sample. Fifty-six girls then completed the self report measure of self esteem (Piers-Harris Children's Self Concept Scale).

Instruments

Four instruments were adopted to answer the research questions:

(a) The Conners' Abbreviated Teacher Rating Scale (CATRS 1969).

(b) The Junior Eysenck Personality Questionnaire (JEPQ, 1975).

(c) Step III Study/Listening Skills Tests (Step III, 1979).

(d) Piers-Harris Children's Self Concept Scale (CSCS, 1969).

The Conners' Abbreviated Teacher Rating Scale

The CATRS is a 10-item rating scale drawn from the 39-item Conners' Teacher Rating Scale (1969), see Appendix B. The 39-item CATRS is a behavior symptom checklist that has five orthogonal factors, four of which are commonly used: hyperactivity, conduct problem, inattentive-passive and tension-anxiety. The CATRS has proven to be drug sensitive and was adopted as part of the battery of tests for drug studies with children published by the Early Clinical Drug Evaluation Unit, Psychopharmacology Research Branch, of the National Institute of Mental Health in the United States (Trités, 1979). The scale appears efficacious for diagnosing and assessing hyperactive children in the classroom. Norms for the widely used scale have also been developed in New Zealand (Werry, Sprague and Cohen, 1975), New York (Kupietz, Bailer, and Winsberg, 1972), the Midwestern United States (Sprague, Cohen and Werry, 1974), and it has been translated into French (Trites, 1970).

The CATRS has proven reliable in identifying hyperactive children and in assessing drug effects. Items are rated on a four-point scale in which the degree of activity is scored

as 3, "very much"; 2, "pretty much"; 1, "just a little"; and 0, "not at all". Children rated with a total score of 15 points or more are classified as hyperactive. The correlation between the abbreviated and complete scales is reported satisfactory (Sprague, Cohen and Werry, 1974).

Junior Eysenck Personality Questionnaire

The Junior Eysenck Personality Questionnaire (Eysenck & Eysenck 1975) was designed to extend Eysenck's method of personality measurement to include children between 7 and 15 years of age (see Appendix B). Through factor analytic methods, Eysenck (1959) hypothesized that there were three important uncorrelated and distinct dimensions underlying human behavior. Extraversion (E), neuroticism (N), and psychoticism (P). The primary advance of the new scale is the introduction of a new variable P for psychoticism, which refers to an underlying personality trait present in varying degrees in all persons.

As in the case of earlier scales, this new scale deals with normal behaviors which become pathological only in extreme cases. The term for psychoticism, "tough-minded", is suggested to be more appropriate for use with non-pathological samples. The JEPQ measures the following traits: P (psychoicism, or tough-mindedness: solitary, troublesome, insensitive, hostile, aggressive tendencies); E (extraversion: outgoing impulsive, uninhibited social inclinations; introversion: quiet, retiring, introspective); N (neuroticism or

emotionality: moody, anxious, emotionally overresponsive, not emotionally stable; and L, the Lie or falsification scale to detect response distortion, Eysenck & Eysenck (1975).

The JEPQ is designed for use with girls and boys and norms are available for groupings on the basis of sex and age. Sex differences have been observed among the children: girls appear to be relatively more neurotic than boys and generally have higher lie scale scores; boys seem to be relatively more extraverted and psychotic than girls. Results appear to indicate a notable increase in extraversion with increasing age, with girls showing the more rapid increase. Girls also seem to become increasingly neurotic; however, this trend was not observed in the male sample. No obvious trend for P was observed.

The JEPQ contains 81 items of which 24 measure extraversion (E), 24 measure neuroticism (N), 21 measure psychoticism (P), and 12 constitute a lie scale (L). With regard to the extraversion scale, extraverts are those who score from 19 to 24 on the questionnaire, ambiverts score between 7 and 18, and introverts score between 1 and 6.

The JEPQ is based largely on British standarization. The sample included over 3,000 children from various parts of the country representing different kinds of schools. The reliabilities of E, N and L are all within the .70 to .90 range, while those for P are a little below the .70 value. These values have been found acceptable for purposes of group

testing and comparison. Eysenck and Eysenck (1975) concluded that these values are not inferior to those available for other published scores.

Step III Study/Listening Skills Test

The Step III Tests, published in 1979, were designed to measure skills and abilities developed as a result of students' educational experiences. The Study Skills/Listening Tests measure information-processing abilities in two separately timed sections. Study Skills measures the ability to locate and organize information and to use and understand common reference sources such as charts, dictionaries, maps and graphs. Listening involves an oral presentation by the teacher and measures the student's ability to follow directions and to comprehend and interpret connected discourse.

Step III contains 50 items; 30 study skills questions precede 20 listening questions, each portion is 20 minutes long. The tests appropriate for each grade level are: Level E (Grades 3.5 - 4.5) and Level F (Grades 4.5 - 5.5).

Step III was the most complex norming effort undertaken in the United States. Pretesting of 25,000 students in grades 3 through 12 permitted a broad sample. Considerable evidence supports the validity of STEP; correlations between parallel forms range from a low of .70 to a high of .95, with the majority at .80 or better.

The reliabilities of the STEP III Fall test forms are: Level E (4f) Study Skills .93, Listening .89; Level F (5f) study skills .93, Listening .81 (Step Manual, 1980).

The Piers-Harris Children's Self Concept Scale

The Children's Self Concept Scale (CSCS) was designed by Piers-Harris in 1969 to assist children in describing the way they feel about themselves (see Appendix B). The children are to respond "yes" or "no" to 80 first-person declarative statements of the type "I am a happy person"; negative terms such as "don't" have been omitted to prevent confusion among younger children. Approximately half of the declarative sentences are worded to indicate positive self concept while slightly more than half indicate negative self concept.

The CSCS has been standardized on 1183 school children in grades 4 through 12 in Pennsylvania. The internal consistency of the scale ranges from .78 to .93 and retest reliability from .71 to .77. There appear to be no consistent sex or grade differences in the means. This scale does not appear to correlate unduly with social desirability; however, a high correlation of -.54 to -.69 was observed with the measure of anxiety. Piers-Harris concluded this correlation represents a true trait correlation rather than one of response style.

Procedure

Prior to our testing of pupils each principal received a letter (see Appendix A) requesting that children be instructed and have practise in filling computer answer sheets. Teachers then provided observers with a class list of girls' names, each girl identified by a number (1,2,3, etc.). A girl's class seating plan thus identified was made available.

Several days prior to data collection an inservice was given by the researcher. The 16 research assistants, both men and women, were teachers well experienced in classroom management. (Some were on leave of absence from teaching; some were retired). Teams of two people were assigned to each class. The research project packages distributed contained instructions, test booklets, work sheets and computer answer sheets. Standard procedures described in the respective test manuals were reviewed and subsequent questions were discussed.

In addition, graduate students collecting behavioral and timed events data (see Appendix C) attended a separate inservice sponsored by the thesis supervisor. The phenomenon being examined in the behavior and timed events sampling conceptually matches hyperactivity as defined by the study. For example, the segmenter behaves in disorganized ways, lacking in purpose, and actions expressed seem independent of each other. These actions tie to hyperactivity more closely

than to nonhyperactivity. In addition, the concept of flow-er would be significantly unlike the hyperactive in so far as all actions expressed are coordinated and efficient.

The chronological events of the study are presented in Appendix E.

The Junior Eysenck Personality Questionnaire, Step III Study/Listening Skills and the Connors Abbreviated Teacher Rating Scales were administered between November 4-7, 1980. Piers-Harris Children's Self Concept Scale testing was completed December 9, 1980.

Preceding each testing session, girls were instructed to try their best and not to discuss or compare questions and answers. Reassurance was given that answers would remain confidential and be used for research purposes only.

Conners' Abbreviated Teacher Rating Scale

Teachers retired to the staff room and answered all items (descriptive terms of behavior) by placing a check mark in the column best describing each girl's degree of activity. The questionnaire also provided space in which the teacher could record other observations and comments.

Step III Study/Listening Skills Test

Testing materials were placed on desks during recess. Questions pertaining to gridding of answers on the computer answer sheet or general directions were answered. During

administration, research assistants circulated to check that each student was working in the proper part of the test book and that answers were marked in the proper place on the answer sheet.

Junior Eysenck Personality Questionnaire

The JEPQ administration adhered to Eysenck's instructions (1975) with students silently reading and responding 'yes' or 'no' to all 81 items. Subjects with answers missing had their attention drawn to the omissions during invigilation.

Piers-Harris Children's Self Concept Scale

Before distributing the scale, one research assistant spoke to the girls about the value of finding out how one really feels about one's self. Central to these instructions was the importance of obtaining a completely honest response rather than a socially desirable one. Girls were directed to "answer the items as you really feel you are, not as you think you ought to be."

CHAPTER IV

Results

Introduction

The analysis is presented in two major sections. The first section contains the association of data from Conners' Abbreviated Teacher Rating Scale, Junior Eysenck Personality Questionnaire, Piers-Harris Children's Self Concept Scale and the Step III Study/Listening Skills Test. The second section comments on observation of behavioral/ timed events and on additional unobtrusive measures, that is, reading test results obtained from cumulative records.

The sequence of reporting is in terms of means and standard deviation, profiles (graphs), and correlations and mean differences.

Five statistical designs were employed. The One Way Anova sought the significance of difference between the means of groups. A comparison of pairs of means was obtained using the Scheffé method for multiple comparisons. Interaction between variables on personality factors (JEPQ) and self concept factors (CSCS) was assessed by Two Way Anova. The Duncan test for group differences analyzed the group means within each grade. Degree of relation between variables will be expressed as a correlation.

Positive correlation exists when variables either increase or decrease simultaneously. Negative correlations occur when one variable decreases as the other variable increases. The Pearson product-moment correlation coefficient measures variables that are quantitative, of the interval or ratio type.

Due to the small sample size in E_1, E_2, and C (grade 4: 9,8,11; grade 5: 11,6,11) the number of correlations discussed in the groups is very much restricted. For example, with a small sample size of only 6, only 6 variables can be considered as independent and free to vary. Others are constrained and are then forced to be perfectly dependent upon these 6 variables.

Conners' Abbreviated Teacher Rating Scale

The Conners' Abbreviated Teacher Rating Scale of 10 items distinguishes the groups "hyperactive" and "nonhyperactive." An analysis of variance reveals significant differences between means among each group within grade.

The results of the Grade 4 analysis ($F = 114.31$; $p < .01$; df 2,25) and Grade 5 analysis ($F = 57.88$; $p < .01$; df 2,25) indicate significant within-grade group differences. Using the Duncan test for group differences a significant difference is observed between all group means within each grade, the greatest difference occuring between hyperactive (E_1) and control (C) groups (see Table I).

TABLE I

MEANS AND STANDARD DEVIATIONS OF HYPERACTIVE AND NONHYPERACTIVE GROUPS IN TERMS OF GRADE AND GROUP AS MEASURED BY CONNERS' ABBREVIATED TEACHER RATING SCALE

Grade 4	Class Mean	E_1	n=9	E_2	n=8	C	n=11
	$\bar{X}$	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
	9.82	17.11	2.37	11.38	1.06	2.73	2.49
Grade 5	Class Mean	E_1	n=11	E_2	n=6	C	n=11
	$\bar{X}$	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
	11.75	19.09	3.91	12.67	1.163	3.91	3.30

E_1 Hyperactive girls, 15 or more points

E_2 Highly active girls, 10 to 14 points

C Control (normal) girls, 0 to 9 points

TABLE II

MEANS AND STANDARD DEVIATIONS OF HYPERACTIVE AND NONHYPERACTIVE GROUPS COMBINED ACROSS GRADES 4 AND 5 IN TERMS OF CONNERS' ABBREVIATED TEACHER RATING SCALE

Group	n	Group Mean	Standard Deviation
Hyperactive girls E_1	20	18.20	3.38
Highly active girls E_2	14	11.92	1.43
Control (normal) girls C	22	3.31	2.91

When combining the grades according to group (see Table II), the one-way anova presents significant differences ($F = 146.19$; $p < .01$; df 2, 53) at the 0.05 level on the CATRS measure. Control girls are least active while the hyperactive girls are the most active. The Duncan test indicates significant differences among all three groups.

Junior Eysenck Personality Questionnaire

The Eysenck Personality Questionnaire evaluates four factors of personality functioning: psychoticism, neuroticism, extraversion, and Lie Scale (see Table III).

TABLE III

MEANS AND STANDARD DEVIATIONS OF THREE GROUPS OF GIRLS, GRADES 4 AND 5, IN TERMS OF THE JUNIOR EYSENCK PERSONALITY QUESTIONNAIRE

Grade 4	Class as a Whole n=28	E_1	n=9	E_2	n=8	C	n=11
Factors	$\bar{X}$	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
Psychoticism	3.10	4.00	2.18	3.87	3.09	1.82	1.78
Extraversion	16.03	15.67	4.33	16.37	3.29	16.09	4.32
Neuroticism	11.53	11.78	6.26	12.50	2.78	10.64	4.32
Lie Scale	12.96	12.11	4.34	12.25	3.19	14.18	4.14

Grade 5	Class as a Whole n=28	E_1	n=11	E_2	n=6	C	n=11
Factors	$\bar{X}$	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
Psychoticism	2.32	3.27	2.65	2.67	1.97	1.18	1.40
Extraversion	16.03	16.09	3.62	14.33	3.62	16.91	2.77
Neuroticism	12.35	12.82	2.44	12.50	1.76	11.82	3.57
Lie Scale	11.92	11.46	3.88	11.33	3.83	12.73	3.07

E_1 Hyperactive Girls E_2 Highly Active Girls

C Control (normal) Girls

No differences were found between grades 4 and 5 ($F = 1.99$; $p < .16$; df 1,50); however, significant differences on the Psychoticism variable among groups E_1, E_2 and C were found on ($F = 5.44$; $p < .01$; df 2,50). The interaction between grade and group was not significant. Group contrast (comparisons) indicated significant P factor differences between groups E_1 and C ($F = 4.84$; $p < .01$; df 2,50) but not between E_1 and E_2, or between E_2 and C ($F = 2.70$; $p < .08$; df 2,50).

No other variable of the Eysenck measure showed any grade differences, group differences or significant interaction.

TABLE IV

CORRELATION MATRIX IN TERMS OF THE JUNIOR EYSENCK PERSONALITY QUESTIONNAIRE

FOR HYPERACTIVE, HIGHLY ACTIVE AND CONTROL GROUP GIRLS, GRADES 4 AND 5

Grade 4	Group	Personality Factors	Psychoticism	Extraversion	Neuroticism	Lie Scale	Grade 5
n=9	E_1	Psychoticism (P)		.216	.209	-.431	E_1 n=11
n=8	E_2			-.657	-.058	.443	E_2 n=6
n=11	C			-.201	.427	-.243	C n=11
	E_1	Extraversion (E)	-.119		.115	.282	
	E_2		-.556		-.189	-.313	
	C		-.336		.402	.079	
	E_1	Neuroticism (N)	.797**	-.275		-.549*	
	E_2		.175	-.398		-.682	
	C		.212	-.175		-.415	
	E_1	Lie Scale (LS)	-.304	.820**	-.643*		
	E_2		-.257	.451	-.933**		
	C		.158	.831**	-.331		

Level of significance * .05 $p \leq 0.05$ ** .005 $p \leq 0.01$

E_1 Hyperactive Girls E_2 Highly Active Girls C Control (normal) Girls

The degree of relation between variables using the Pearson product-moment correlation is presented in Table IV. E_1 E_2 C will always refer to hyperactive, highly active and control groups, respectively.

Correlations indicating high to moderately high association among JEPQ variables are observed for grade 4 in group E_1 between the following variables: on P and N ($r = .797$; $p \leq .01$), E and LS ($r = .820$; $p \leq .01$), and between N and LS ($r = .643$; $p \leq .05$).

In grade 4 E_2 the correlation between variables N and LS is significantly different than 0.0 ($r = -.933$; $p \leq .01$). A high positive correlation was found among variables E and LS ($r = .831$; $p \leq .01$) in the grade 4 controls.

The grade 5 sample failed to display significant correlations on the JEPQ.

TABLE V

CORRELATION MATRIX IN TERMS OF CONNERS' ABBREVIATED TEACHER RATING SCALE AND THE JUNIOR EYSENCK PERSONALITY QUESTIONNAIRE, HYPERACTIVE AND NONHYPERACTIVE GIRLS, GRADES 4 AND 5

Grade	Group	Factor	Psychoticism	Extraversion	Neuroticism	Lie Scale
4	E_1 n = 9	Conners'	.339	-0.093	.592*	-.366
4	E_2 n = 8		.234	.159	-.364	.474
4	C n = 11		-.328	.355	-.465	.538
5	E_1 n = 11		.355	.282	-.302	-.016
5	E_2 n = 6		.083	.158	-.835*	.277
5	C n = 11		.350	.469	.847**	-.309

Level of significance * .05 $p \leq 0.05$ ** .005 $p \leq 0.01$

E_1 Hyperactive E_2 Highly active C Control (normal)

Significant correlation ($r = .592$; $p \leq .05$) between Eysenck's N and the Conners' scale exists in the hyperactive grade 4 E_1 group as seen in Table V. A positive correlation among N and CATRS ($r = .847$, $p \leq 0.01$) is observed for grade 5 control

girls. A high negative relationship ($r = -.835$; $p \leq .05$) is found on N among highly active, grade five E_2 girls.

The correlation among the remaining variables was not significant.

Piers-Harris Children's Self Concept Scale

The Piers-Harris measure of personality functioning obtained through self-report presents a profile of six variables: behavior, intellectual and school status, physical appearance, anxiety, popularity, happiness and satisfaction (see Table VI).

There were no significant differences between means by grade ($F = .961$; $p > .331$; df 2,50), by group ($F = 2.71$; $p > .075$; df 2,50), or interaction between grade and group ($F = .122$; $p > .885$; df 2,50). Group comparisons indicated differences between groups E_1 and C ($F = 2.71$; $p > .076$; df 2,50), but not among E_1 and E_2 nor between E_2 and C ($F = 5.56$; $p > .577$; df 2,50).

TABLE VI

MEANS AND STANDARD DEVIATIONS OF HYPERACTIVE AND NONHYPERACTIVE GIRLS IN TERMS OF PIERS-HARRIS CHILDREN'S SELF CONCEPT SCALE ACCORDING TO GROUP FOR GRADES 4 AND 5

Grade	r	Class Mean	Hyperactive E_1		Highly Active E_2		Control (normal)	
4	Factor	$\bar{x}$	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd
	n		9		8	11		
	Raw Scores	54.79	51.00	16.47	53.28	14.16	59.00	12.30
	Percentiles	56.04	48.33	34.99	51.38	31.95	65.73	28.24
5	n		11		6	11		
	Raw Scores	55.89	51.82	16.16	51.83	13.09	62.18	9.68
	Percentiles	58.82	50.18	35.79	49.67	29.93	72.46	22.44

TABLE VII

CORRELATION MATRIX IN TERMS OF THE PIERS-HARRIS CHILDREN'S SELF CONCEPT SCALE FOR HYPERACTIVE AND NONHYPERACTIVE GIRLS, GRADES 4 AND 5

Grade 4	Group	Self Concept Factors	Behavior	Intellectual and School Status	Physical Appearance	Anxiety	Popularity	Happiness and Satisfaction	Grade 5
n=9	E_1	Behavior		.833**	.506*	.469	.297	.714*	E_1 n=11
n=8	E_2			.797*	.196	.662	.350	.093	E_2 n=6
n=11	C			.386	.359	.283	.447	.488*	C n=11
	E_1	Intellectual and School Status	.919**		.620*	.419	.571*	.696*	
	E_2		.638*		.671	.679	.577	.059	
	C		.415		.714*	.340	.383	.447	
	E_1	Physical Appearance	.777**	.909**		.705**	.476	.756**	
	E_2		.613*	.768*		.242	.745*	.941**	
	C		.392	.396		.700**	.577*	.449	
	E_1	Anxiety	.714*	.844**	.673*		.494	.826**	
	E_2		.859**	.758*	.827**		.164	.280	
	C		.526*	.624*	.412		.225	.650*	
	E_1	Popularity	.728*	.735*	.613*	.686*		.609*	
	E_2		.360	.695*	.803**	.555*		.715*	
	C		.243	.773**	.522*	.823**		.123	
	E_1	Happiness and Satisfaction	.944**	.834**	.779**	.628*	.705*		
	E_2		.763*	.643*	.905**	.879**	.542		
	C		.741**	.514*	.663*	.570*	.576*		

Level of significance * .05 $p \leq 0.05$ ** .005 $p \leq 0.01$

E_1 Hyperactive E_2 Highly Active C Control (normal)

A separate analysis for each grade is presented in Table VII. The abbreviations for the CSCS are: B, Behavior; IS, Intellectual and School Status; PA, Physical Appearance; A, Anxiety; P, Popularity; HS, Happiness and Satisfaction. Significant correlations on all personality variables were found in the grade four hyperactive E_1 girls. Very high correlations are reported among variables B and IS ($r = .919$; $p \leq .005$), B and HS ($r = .944$; $p \leq .005$), PA and IS ($r = .909$; $p \leq .005$). A high correlation is observed between variables A and IS ($r = .844$; $p \leq .005$) and among H and IS ($r = .834$; $p \leq .005$). Of the remaining correlations five are moderately high (ranging from $r = .779$; $p \leq .005$ to $r = .705$; $p \leq .05$) and 4 are moderately associated ($r = .673$; $p \leq .05$ to $r = .613$; $p \leq .05$).

The grade 4 E_2 correlations indicate very high association among H and PA variables ($r = .905$; $p < .005$). A high relationship among the variables B and A ($r = .859$; $p \leq .005$), PA and A ($r = .827$; $p \leq .005$), PA and P ($r = .803$; $p \leq .005$), and between A and HS ($r = .879$; $p \leq .005$) is observed. Three moderately high correlations (ranging $r = .768$; $p \leq .05$ to $r = .758$; $p \leq .005$) and four moderate correlations ($r = .695$; $p \leq .05$ to $r = .613$; $p \leq .05$) are observed.

The grade 4 C group indicates a high correlation among P and A variables ($r = .823$; $p \leq .005$), a moderately high correlation between P and IS ($r = .735$; $p \leq .05$), and HS

and B ($r = .741$; $p \leq .005$). Two moderate correlations are found in A and IS ($r = .624$; $p \leq .05$), and HS and PA ($r = .663$; $p \leq .05$).

The grade five population presents fewer significant correlations than grade four. In the hyperactive group, E_1 high correlations occur among B and IS ($r = .883$; $p \leq .005$), and A and HS ($r = .826$; $p \leq .005$). Three moderately high correlations (from $r = .756$; $p \leq .005$ to $r = .705$; $p \leq .005$) and three moderate correlations ($r = .696$; $p \leq .05$ to $r = .609$; $p \leq .05$) are observed.

The correlations for grade five E_2 indicate very high correlation among variables PA and HS ($r = .941$; $p \leq .005$), a high correlation among variables B and IS ($r = .797$; $p \leq .05$), and two moderately high correlations among PA and P ($r = .745$; $p \leq .05$) and among variables P and HS ($r = .715$; $p \leq .05$).

In the grade five control group two moderately high correlations among PA and IS ($r = .714$; $p \leq .05$), PA and A ($r = .700$; $p \leq .005$), and a moderate correlation A and HS ($r = .650$; $p \leq .05$) are reported.

TABLE VIII

CORRELATION MATRIX IN TERMS OF THE PIERS-HARRIS CHILDREN'S SELF CONCEPT SCALE, CONNERS' ABBREVIATED TEACHER RATING SCALE AND JUNIOR EYSENCK PERSONALITY QUESTIONNAIRE FOR HYPERACTIVE AND NONHYPERACTIVE GIRLS, GRADE 4

		GRADE FOUR GIRLS					
Group	Factors	Behavior	Intellectual and School Status	Physical Appearance	Anxiety	Popularity	Happiness and Satisfaction
E_1	Conners'	-.168	-.251	-.088	-.468	.131	-.136
E_2		-.474	.191	.197	-.212	.602*	-.218
C		-.076	.402	.550*	.446	.575*	.459
E_1	Eysenck Psychoticism	-.670*	-.618*	-.414	-.684*	-.304	-.541*
E_2		-.826*	-.660*	-.760*	-.945**	-.576*	-.854**
C		-.611*	-.081	-.332	-.657*	-.432	-.666*
E_1	Eysenck Extraversion	.711*	.595*	.464	.256	.449	.663*
E_2		.451	.579	.233	.429	.551	.155
C		.203	.055	-.032	-.006	-.062	.381
E_1	Eysenck Neuroticism	-.631*	-.558*	-.210	-.698*	-.395	-.469
E_2		.145	-.362	-.201	-.049	-.318	.133
C		.367	-.358	.063	-.596*	-.521*	-.060
E_1	Eysenck Lie Scale	.712*	.645*	.383	.495	.489	.562*
E_2		-.202	.357	.248	.124	.421	.126
C		.383	.030	-.059	-.105	-.109	.189
E_1	Piers-Harris Raw Score	.939**	.968**	.859**	.867**	.832	.900**
E_2		.853**	.872**	.861**	.977**	.625*	.861**
C		.685*	.829**	.643*	.849**	.838**	.825**

Level of significance * .05 $p \leq 0.05$ ** .005 $p \leq 0.01$

E_1 Hyperactive Girls n=9 E_2 Highly Active Girls n=8

C Control (normal) Girls n=11

TABLE IX

CORRELATION MATRIX IN TERMS OF THE PIERS-HARRIS CHILDREN'S SELF CONCEPT SCALE, CONNERS' ABBREVIATED TEACHER RATING SCALE AND JUNIOR EYSENCK PERSONALITY QUESTIONNIARE FOR HYPERACTIVE AND NONHYPERACTIVE GIRLS, GRADE 5

		GRADE FIVE GIRLS					
Group	Factors	Behavior	Intellectual and School Status	Physical Appearance	Anxiety	Popularity	Happiness and Satisfaction
E_1	Conners'	.103	.371	.654*	.473	.612*	.557*
E_2		.191	-.170	-.093	-.346	.411	.000
C		.104	-.362	-.263	-.421	-.332	-.077
E_1	Eysenck Psychoticism	-.222	.027	.062	-.260	.226	-.048
E_2		-.460	-.715	-.542	-.575	-.762	-.467
C		-.575*	-.726*	-.452	-.111	-.604*	-.379
E_1	Eysenck Extraversion	.333	.441	.405	.191	.528*	.591*
E_2		.613	.573	.374	.822*	.543	.511
C		.209	.158	.127	-.280	.367	.110
E_1	Eysenck Neuroticism	-.657	-.686*	-.183	-.362	-.466	-.436
E_2		-.611	-.154	.162	.080	-.264	.187
C		.258	-.324	-.004	-.030	-.105	.126
E_1	Eysenck Lie Scale	.556*	.364	-.104	.335	.198	.510*
E_2		.456	.007	-.512	-.148	-.398	-.654
C		-.007	-.058	-.077	-.359	.468	-.405
E_1	Piers-Harris Raw Score	.870**	.901**	.744**	.739**	.651*	.924**
E_2		.780*	.943**	.752*	.662	.726*	.679
C		.707*	.740**	.828**	.626*	.738**	.647*

Level of significance * $.05 \geq p \geq 0.05$ ** $.005 \geq p \geq 0.01$

E_1 Hyperactive Girls n=11 E_2 Highly Active Girls n=6

C Control (normal) Girls n=11

The correlation matrix in Table VII shows that grade four E_1 display significant moderately high correlations among Eysenck's E and Piers' B ($r = .711$; $p \leq .05$), Lie Scale and B ($r = .712$; $p \leq .05$), and E and HS ($r = .663$; $p \leq .05$). Negative correlations are reported between variables Eysenck P and B ($r = -.670$; $p \leq .05$), P and IS ($r = -.618$; $p \leq .05$), P and A ($r = -.684$; $p \leq .05$), N and B ($r = -.631$; $p \leq .05$), and N and A ($r = -.698$; $p \leq .05$).

In grade four E_2 a moderate correlation is observed between Conners' and Piers' P scale ($r = .602$; $p \leq .05$). Negative correlations are observed for the Eysenck P factor and several Piers' variables: P and A ($r = -.954$; $p \leq .005$), P and HS ($r = -.854$; $p \leq .005$), P and B ($r = -.826$; $p \leq .05$), P and PA ($r = -.760$; $p \leq .05$), and P and IS ($r = -.660$; $p \leq .05$).

The grade four C population display negative correlations between the Eysenck P and Piers' factors: P and HS ($r = -.666$; $p \leq .05$), P and A ($r = -.657$; $p \leq .05$), P and B ($r = -.611$; $p \leq .05$), and N and A ($r = -.596$; $p \leq .05$).

Fewer significant correlations are evidenced in the grade five girls (see Table IX). In the hyperactive E_1 group the association between the Conners' and Piers' scales is C and PA ($r = .654$; $p \leq .05$) and C and P ($r = .612$; $p \leq .05$). The association between Eysenck E and HS is ($r = .591$; $p \leq .05$). A moderate negative correlation is found among Eysenck's N and PA ($r = -.686$; $p \leq .05$).

The E_2 group displays significant high correlation among Eysenck E and A variables ($r = .822$; $p \leq .05$). In the grade five girls significant negative correlations appear among Eysenck's P and Piers on variables P and IS ($r = -.726$; $p \leq .05$), and P and P ($r = -.604$; $p \leq .05$).

Step III Study/Listening Skills Tests

The study skills portion measured student ability to locate and to organize information and understand common reference sources. Listening measured the ability to follow directions, comprehend, and interpret connected discourse. The means and standard deviations are presented in Table X.

There were no significant differences on study skills between means by grade ($F = .131$; $p > .718$; df 2,50), by group ($F = .107$; $p > .898$; df 2,50), or interaction among grade and group ($F = 1.250$; $p > .295$; df 2,50). Group comparisons indicated no differences between groups. No significant differences were observed for Listening Skills either by grade ($F = .580$; $p > .450$; df 2,50), by group ($F = .516$; $p > .600$; df 2,50), or interaction between group and grade ($F = 2.136$; $p > .129$; df 2,50). Differences failed to appear when groups were compared.

TABLE X

MEANS AND STANDARD DEVIATIONS OF THREE GROUPS OF HYPERACTIVE AND NONHYPERACTIVE GIRLS, GRADES 4 AND 5, IN TERMS OF CONNERS' ABBREVIATED TEACHER RATING SCALE, JUNIOR EYSENCK PERSONALITY QUESTIONNAIRE, PIERS-HARRIS CHILDREN'S SELF CONCEPT SCALE AND STEP III STUDY/LISTENING SKILLS TEST

Factors		Conners'		Junior Eysenck Personality Questionnaire						Piers-Harris		Step III Skills Test			
		CATRS		P		E		N		L		CSCS		SS		LS	
Grade	Group	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd
4	E_1 n=9	17.111	2.37	4.000	2.18	15.667	4.33	11.778	6.26	12.111	4.34	51.000	16.47	20.889	7.85	14.778	3.77
4	E_2 n=8	11.375	1.06	3.875	3.09	16.375	3.29	12.500	2.78	12.250	3.20	53.250	14.16	19.125	6.83	14.375	3.42
4	C n=11	2.727	2.49	1.818	1.78	16.091	4.32	10.636	4.32	4.319	4.14	59.000	12.30	18.727	7.36	14.364	2.34
5	E_1 n=11	19.091	3.91	3.273	2.65	16.091	3.62	12.818	2.44	11.455	3.88	51.818	16.16	17.818	8.16	12.182	4.31
5	E_2 n=6	12.667	1.63	2.667	1.97	14.333	3.61	12.500	1.76	11.333	3.83	51.833	13.09	20.500	6.44	15.167	4.22
5	C n=11	3.909	3.30	1.182	1.40	16.909	2.77	11.818	3.57	12.727	3.07	62.182	9.68	22.727	4.43	15.727	2.00

E_1 Hyperactive Girls E_2 Highly Active Girls C Control (normal) Girls

TABLE XI

PERCENTILE MEANS AND STANDARD DEVIATIONS FOR THREE GROUPS OF HYPERACTIVE AND NONHYPERACTIVE GIRLS, GRADES 4 AND 5, ACCORDING TO ELEMENTARY READING TEST SCORES

Grade 4	Factor	Class Mean $\bar{x}$	E_1 $\bar{x}$	n=8 sd	E_2 $\bar{x}$	n=6 sd	C $\bar{x}$	n=8 sd
	Decoding	35.27	37.250	34.446	29.500	19.045	37.625	23.652
	Comprehension	31.59	32.000	29.650	27.833	14.372	34.000	24.963
Grade 5	**Factor**	**Class Mean**	**E_1**	**n=10**	**E_2**	**n=5**	**C**	**n=9**
			$\bar{x}$	sd	$\bar{x}$	sd	$\bar{x}$	sd
	Decoding	41.12	30.600	24.749	37.200	27.653	55.000	31.281
	Comprehension	35.16	20.200	16.969	39.600	25.987	49.333	31.863

E_1 Hyperactive Girls E_2 Highly Active Girls

C Control (normal) Girls

Unobtrusive Measures - Elementary Reading Test Scores

Reading test scores obtained from cumulative folders were not available for the entire sample. The following results are based on the students with complete data; the number of girls in the groups were as follows: grade 4 E_1 = 8, E_2 = 6, C = 8; grade 5 E_1 = 10, E_2 = 5, C = 9 (see Table XI).

Decoding Test

The results of the grade 4 analysis ($F = .186$; $p > .831$; df 2,21) and grade 5 ($F = 1.86$; $p > .179$; df 2,21) fail to indicate significant grade and group differences (see Table XI).

Comprehension

The grade 4 findings ($F = .109$; $p > .897$; df 2,19) did not present significant differences between the groups or grades. Grade 5 results ($F = 3.22$; $p \leq .059$; df 2,23) indicate means differences are approaching significance; however, the small population and large error do not permit the comparison of reading scores with school achievement of hyperactive and nonhyperactive girls (see Table XI).

TABLE XII

CORRELATION MATRIX IN TERMS OF CONNERS' ABBREVIATED TEACHER RATING SCALE, JUNIOR EYSENCK PERSONALITY QUESTIONNAIRE, PIERS-HARRIS CHILDREN'S SELF CONCEPT SCALE, STEP III STUDY/LISTENING SKILLS, DECODING AND COMPREHENSION READING TEST PERCENTILES

Grade 4	Group	Factor	Step Study	Step Listening	Decoding	Compre-hension	Step Study	Step Listening	Decoding	Comprehension	Grade 5
n=9	E_1	Conners'	-.739*	-.039	-.706*	-.599*	-.228	-.226	-.275	-.281	E_1 n=11
n=8	E_2		-.756*	-.793**	-.477	-.570	.532	-.310	-.691	-.357	E_2 n=6
n=11	C		-.190	.036	-.282	-.445	-.282	.253	-.056	-.218	C n=11
	E_1	Eysenck Psychoticism	-.636*	-.609*	-.691*	-.656*	-.391	-.802**	-.479	-.669*	
	E_2		-.560	-.333	-.360	-.671	-.205	.249	-.073	-.495	
	C		-.567*	-.127	-.467	-.175	-.265	-.087	-.389	-.476	
	E_1	Eysenck Extraversion	.267	.225	.249	.312	-.196	-.367	-.496	-.541*	
	E_2		.328	.328	.193	.319	.610	.193	.328	.836*	
	C		-.024	.442	.087	.357	-.312	.355	-.054	-.064	
	E_1	Eysenck Neuroticism	-.634*	.352	-.473	.444	.169	-.310	-.363	-.439	
	E_2		.293	.293	.646	.454	.467	.390	.312	.164	
	C		.060	.233	.809**	.816**	-.180	.523*	.238	.114	
	E_1	Eysenck Lie Scale	.488	.338	.241	.326	.154	.509*	-.060	.125	
	E_2		-.441	.441	.464	-.385	-.438	-.376	.131	-.258	
	C		-.434	.096	.073	.271	-.337	-.225	.477	-.399	
	E_1	Piers-Harris Raw Score	.718*	.548	.568	.490	-.484	-.064	-.107	-.281	
	E_2		.348	.228	.264	-.571	.228	.189	.388	.830*	
	C		.368	.118	-.030	-.446	.400	.461	.740*	.829**	

Level of significance * .05 $p \leq 0.05$ ** .005 $p \leq 0.01$

E_1 Hyperactive Group E_2 Highly Active Group

C Control (normal) Group

In the correlation matrix in Table XII, the hyperactive E_1 grade four girls demonstrate significant moderate to moderately high negative correlations on measures of scholastic achievement. Negative correlations are reported between variables CATRS, JEPQ, Step III Study/Listening Skills, Decoding and Comprehension: CATRS and SS ($r = -.739$; $p \leq .05$), CATRS and Decod. ($r = -.706$; $p \leq .05$), CATRS and Comp. ($r = .599$; $p \leq .05$), Eysenck variable P and SS ($r = .636$; $p \leq .05$), P and LS ($r = -.609$; $p \leq .05$), P and Decod. ($r = -.691$; $p \leq .05$), P and Comp. ($r = -.656$; $p \leq .05$), N and SS ($r = -.634$; $p \leq .05$). One moderately high positive correlation was present between Piers-Harris CSCS and Step III Study ($r = .718$; $p \leq .05$).

The grade four E_2 displayed high negative correlations between CATRS and SS ($r = -.756$; $p \leq .05$), and among CATRS and LS ($r = -.793$; $p \leq .005$).

In grade four control girls a high positive correlation exists between Eysenck N and Decod. ($r = .816$; $p \leq .005$).

The grade five girls present fewer significant correlations. There appeared no significant correlations between CATRS and measures of scholastic achievement; however, correlations are observed for Eysenck, Piers-Harris and academic measures.

The hyperactive E_1 in grade five displayed high negative correlation among variables P and LS ($r = -.802$; $p < .005$); a moderate negative correlation was observed between P and Comp. ($r = -.669$; $p \leq .05$).

Grade 5 E_2 presents high positive correlations between Eysenck E and Comp. ($r = .836$; $p \leq .05$), and among P-H and Comp. ($r = .830$; $p \leq .05$).

The grade 5 control group reported a high positive correlation between variables P-H and Comp. ($r = .829$; $p \leq .005$) and moderately high correlation among P-H and Decod. ($r = .740$; $p \leq .05$).

Behavior Event Sampling and Timed Event Sample

Trained observers collecting cases of children whose operational behavior with schoolwork might illustrate performances by hyperactive and nonhyperactive subjects entered the grade 4 and 5 rooms assigned to this study (reported in Appendix C).

The concept of activity used in the behavioral events sampling concerned an efficiency or connectedness of the behavior relative to in-classroom performance. In this regard, 10 girls identified as segmenters, their behavior identified as disconnected. Overlying Conners' criteria, 9 of 10 segmenters were identified among the group of 20 hyperactive girls suggesting the relatedness between hyperactivity and the concept of segmenting as outlined in Figures 4-6, (Appendix D).

The on-task behavior and efficiency of a school operation is referred to as flowing. The student's CATRS protocols revealed that the segmenter (hyperactive) girls

displayed fragmented actions and poor school operational behaviors. They were considered by teachers to be definitely less productive than the flow-ers. Flow-ers appeared not only systematic and efficient on their school tasks, they also had a lower level of behavioral disturbance.

Hyperactive students displayed a higher median CATRS score (9) than did flow-ers (5). In addition, hyperactives presented lower medians on Step III Study/Listening skills percentile scores (49,40) compared with flow-er scores (55,42). Behavioral event and timed event analysis indicates a poor performance by segmenters (10,4.5) while flow-ers or nonhyperactives scored favourably (24.5,11). The two groups were very similar on Step III Listening skills percentile scores (segmenters 40, flow-ers 42).

A visual profile of the mean scores of the test factors for hyperactive and nonhyperactive children is presented in Figures II and III (see Appendix D). A wide range of scores is evident. This combined with the sample size increased the margin for error and restricted the opportunity to generalize from the data. The group of hyperactive girls (20) was approximately 10 percent of the representative sample (226). If the size of this sample were increased to 500, or greater, the number in the hyperactive group could substantially increase.

CHAPTER V

Discussions and Implications

In general terms, the main purpose of this research was to examine the assumptions underlying the association of hyperactivity and personality characteristics in girls. More specifically, the primary objectives were to test the relationship between hyperactivity and the variables extraversion, neuroticism, psychoticism, social dissimulation, self concept and academic achievement. In this chapter the results are discussed in relation to the objectives and issues related to children's hyperactivity. Teachers' responses on the Conners' Abbreviated Teacher Rating Scale and pupils response on the Junior Eysenck Personality Questionnaire, Piers-Harris Children's Self Concept Scale and Step III Study/Listening Skills are discussed. At the end of chapter V unobtrusive measures of school achievement, reading test scores, and aspects of teacher reliability data from an independent measure are included.

Conners' Abbreviated Teacher Rating Scale

The results of this study indicate that it is possible for the classroom teacher to isolate the behaviors of hyperactive children using the Conners' (1969) scale. This scale measures children's classroom behavior, group

participation and attitude toward authority. As predicted, the Conners' was able to distinguish between hyperactive and nonhyperactive children. According to this instrument 10 percent of the sample of girls in grades 4 and 5 were identified. Children identified as hyperactive on CATRS were also identified on the behavioral events sample as disorganized and inefficient on their school work. Certainly disorganization in activities may be seen as a dimension of hyperactivity. While statistical validation available on the CATRS appears to be limited, the results of the Timed Events and Behavioral Events measure do provide a dimension of validation worthy of consideration in this study.

Junior Eysenck Personality Questionnaire

As previously noted, individual differences and personality factors are of paramount importance in understanding the complexities of hyperactivity.

One plausible explanation for highly active behavior may be that hyperactivity in girls would be associated with an extraverted dimension in personality while the nonhyperactive personality would reflect an introverted factor. The present study did not confirm this hypothesis; rather, it observed that there was very little difference between the groups on this measure. There are exceptions. Our sample of girls may not have occupied a position on the extreme of this personality factor; it is likely they represent the midpoint. The intercorrelations of Eysenck variables indicate

that, for the hyperactive girls, correlation among subtests was high, i.e. between factors Extraversion (E) and Lie Scale (LS).

Another common assumption underlying hyperactive behavior concerns the degree of emotional stability-instability. It was hypothesized that hyperactive girls might be less emotionally stable than normal girls when measured on the neuroticism personality factor. Our subjects appear to occupy the middle area of this personality dimension. The results report no significant differences between the two groups. However, an interesting and significant inter-correlation among variables Neuroticism (N) and Psychoticism (P), Neuroticism (N) and Lie Scale (LS) was observed for grade 4 E_1, and in grade 4 E_2, between variables N and LS. The question needs to be more sharply defined because in the case of factors N and LS hyperactive girls did score differently from controls.

The hyperactive population is generally depicted to receive negative reinforcement. An additional concern in studying behavior is the need to present socially acceptable answers rather than to respond spontaneously and speak one's mind. The findings suggest that hyperactive children are no different than nonhyperactive on the social dissimulation variable. One reason for this result may be that children at this age do worry that they be socially acceptable. What happens, and what they say may differ from one day to the next.

The hypothesis that hyperactive girls score more highly on the measure Lie Scale than control girls was not confirmed. However, significant intercorrelations are observed for grade 4 E_1 among factors LS and E, LS and N, and in grade 4 E_2 between variables LS and N.

Central to the study of hyperactivity is the question whether a positive and significant difference in tough-minded behaviors would be present in the hyperactive but absent in the normal female sample. Eysenck (1952) considers the P factor, psychoticism, to be a strong influence in behavioral disturbance. As predicted, the results of this study confirm a strong presence of the P factor in hyperactive girls, and not in normal girls. The influence of tough-mindedness was clearest in comparing groups E_1 and C for both grades. In grade 4 E_1 an intercorrelation of P and N was observed.

The relationships between tough-mindedness and field dependent-independent, authoritative-permissive, and reflective-impulsive factors need to be explored. Children's scores that appear on the extreme dimension of the P variable may demonstrate odd, isolated behavior, lacking in human feelings even to those near and dear. They may, when aroused, disregard extreme danger and their exaggerated behavior suggests a relationship between P and the phenomenon of impulsivity.

Piers-Harris Children's Self Concept Scale

The literature on hyperactivity indicates that children so labelled reflect poor self concept and negative self perceptions. Hence, the possibility that hyperactive girls would have significantly less positive self concept than nonhyperactive girls was examined. Results do not confirm this prediction. These findings concur with Prinz and Loney (1974). The mean differences were not significant (Table VI). Strong significant intercorrelations on all self concept variables were indicated in the grade 4 hyperactive sample (Table VII). These factors are somewhat inexplicable. Piers-Harris consider that extremely high scores do not indicate a positive self concept; rather, they are viewed as defensive responses. The possibility does exist, however, that the young children identified as hyperactive may indeed have genuinely high self concepts. Low as well as high scores were observed in both groups.

Step III Study/Listening Skills Test

Another generalization about hyperactive children is that their school achievement will be adversely affected through basic difficulties with attention deployment and response inhibition. However, as previously cited research suggests, hyperactive students should be capable of average achievement (Trites, 1979). The degree to which individuals attend and respond is a dimension on which they vary.

Accordingly, in seeking to determine whether the measured school achievement of hyperactive girls was significantly lower than nonhyperactive girls, no significant differences were observed although the range of scores for the hyperactive children was indeed broader than nonhyperactive children.

Unobtrusive Measures - Elementary Reading Test Scores

As an additional measure of school achievement, and to increase the descriptive integrity of the hyperactive female student, reading test scores were obtained through school files. The test comprised two parts, skills in Decoding and Comprehension. Significant differences were not observed for either portion. Although grade 5 presents large mean differences on the Comprehension portion ($F = 3.22$; $p \leq .059$) the small sample size and large error do not permit a statement of significance.

Behavioral Events Sample

Children's operational behavior with school related tasks was assessed by behavior rating and timed event sampling measures (Bishop, 1981). Results indicated segmented behavior and productivity by the nine hyperactive girls in grades 4 and 5 while flowing, productive behavior was observed for the controls in grades 4 and 5. These measures were gathered by observers going into the classroom. Children were visually identified and scored on variable

coordinated activity within four minutes on the two measures indicated, behavioral events and timed events scales. Nine out of ten segmenters appeared in the hyperactive profiles when these subjects were identified at the completion of the study. This suggests that CATRS and these two measures are correlated. It further suggests that the phenomenon of hyperactivity does indeed indicate a lack of synchrony in the process of completing school related tasks (see Figure 4). This should further be investigated.

Conclusions

In summary, the above findings suggest the following conclusions:

1. Hyperactive girls did not exhibit greater extraverted personality dimensions than nonhyperactive girls. However, the concept of extraversion needs to be more carefully examined. The relationship between dimensions such as distractibility, purposefulness, attendability and hyperactive behavior should be investigated.
2. Hyperactive girls were as emotionally stable as nonhyperactive girls. However, the trend established in the relationship between variables N and P, and N and E warrants investigation.
3. Hyperactive girls did not differ from normal girls on social dissimulation (Lie Scale).

Significant intercorrelations suggest the need to replicate this aspect of the study, considering that at the level of significance .5 the motivation to dissimulation is high.

4. Hyperactive girls exhibit greater tough-mindedness than nonhyperactive girls. There is a positive and significant correlation between the P factor and hyperactivity. Further investigation of children whose responses are on the extreme dimension of the P variable is warranted. Children with a high P factor could be identified as disruptive in school, more difficult to control, less capable of social learning, less positive in social interaction and as being at risk for delinquincy.
5. Hyperactive girls did not differ from normal girls on the self concept scale; they were equally confident. Piers-Harris point out that high scores reflect defensiveness and these girls may indeed have been defensive. This interpretation plus the significant intercorrelation between Piers-Harris variables suggests a more careful examination of the concepts of self perception, self report, self regard and hyperactivity should be undertaken.

6. Hyperactive girls did not score significantly lower than nonhyperactive girls on the Step III Study/Listening Skills Test measuring processing, organization, comprehension and listening skills. Successful performance may be contingent upon discriminating between competing stimuli, physical ability to attend, interest in the content, and the purpose for listening. Therefore, investigation of these variables could be profitable.

The concept of hyperactivity is complex. Into this perplexing fabric we find interwoven dimensions of personality, behavior, environment, development, learning and physiological well-being. Female school-age children have been neglected by research (Whalen and Henker, 1980). This relatively narrow focus was of concern; consequently, this study examined aspects of hyperactivity and personality characteristics in girls.

Results indicate hyperactive girls are more tough-minded than nonhyperactive girls, that is, more aggressive. The presence of a strong P variable on the JEPQ in the hyperactive sample stands noteworthy; it correlates highly with impulsiveness and sensation seeking (Eysenck and Eysenck, 1980), and presents a qualitative dimension of behavior in hyperactive girls recently indicated in antisocial and delinquent populations (Eysenck, 1981, Eysenck and McGurk, 1980, Saklofske and Eysenck, 1980). Intercorrelations of

self concept variables indicate a trend in which all hyperactive girls are very concerned with their behavior as it affects their happiness, school status, intellectual functioning and their personal appearance. The younger hyperactive girls were also worried about their popularity. In terms of academic achievement, there are no significant differences within the grade and across the group on the adopted measures. Findings suggest that hyperactive girls may better respond to structure in education than those not so identified.

The concept of hyperactivity is not yet well understood (Whalen and Henker, 1980, Trites, 1979, Ross and Ross, 1976). Hence, the study needs to be replicated. The sample size may be increased by studying more children here and elsewhere, by studying all the students within one grade at a time, and by including the kindergarten population. Further dimensions of the sample may be examined by studying different groups of children such as students on medication, ethnic minorities, the physically disabled, learning disabled and so forth.

Testing should include the use of more measures on the sample studied. Of value would be measures of intelligence (perhaps the WISC-R), reading and mathematics. To ensure greater validity the blind and simultaneous testing of all groups is highly desirable. In addition, the groups in the study may be selected and their results scored by the

computer, i.e. the investigator may coordinate the observers and place the gathered raw data into the computer. The additional study which was conducted while this study was in progress indicated that a high degree of agreement exists between the teacher rating scale (identifying 10 percent of this representative sample as hyperactive) and the independent behavior observations.

The range of measures employed seemed narrower than originally thought. These tests may not have been able to assess the finer degrees of comprehension necessary to respond accurately. Perhaps other measures such as the Nelson Reading Test could be adopted to examine the more discrete facets and competency in exercising literal, deductive, inferential and predictive comprehension skills.

All children are governed by individual personalities and behavioral patterns. This study has shown some differences in female behavior generally labelled hyperactive. For example, the hyperactive girls were viewed by teachers to be generally less productive than nonhyperactive girls as indicated by their results on the CATRS and a strong trend toward tough-mindedness was observed in the hyperactive group as indicated by their results on the JEPQ. Questions abound. How would the girls scores change on the measure of tough-mindedness, self perception and achievement as they grew older?

The concept of hyperactivity is indeed complex. In general, the girls labelled hyperactive by the teachers and by the behavioral instruments behaved more like the nonhyperactives on the global measures of the tests employed. However, on the discrete measures, differences appeared between the normal and hyperactive girls.

In conclusion, this study suggests that females are different from males and may, therefore, require a different psychological approach to the management of their hyperactivity.

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APPENDICES

APPENDIX A

LETTERS

807, 11135 - 83 Avenue,
Edmonton, Alberta,
T6G 2C6

October 28, 1980

Dear

With regard to our recent telephone conversations regarding a research project, I am submitting the finalized plans.

During the week of November 4th through 7th, a team of researchers from the University of Alberta will be present during the morning to observe the learning styles of children in grades four through six.

The study of children is in two stages. Stage one comprises four parts:

1. direct observation of children during regular class in desk activity (15-20 minutes).
2. teacher response questionnaires completed by teachers.
3. a task of study skills - listening undertaken by both boys and girls (40 minutes).
4. a written survey (Yes, No) of girls in each class (20 minutes).

Stage two will require those girls selected from all the above information to complete an additional questionnaire (15 minutes) at a later date.

This study requires visual observations to be carried out directly following the morning recess. At that time, the teachers will retire to the staff room to respond to their questionnaire. Students will be under supervision of the researchers and shall complete their tasks by lunch time.

To help us prepare for accurate assessment of pupils, we would greatly appreciate your assistance by the following:

1. a class list of the names of girls with each student assigned a number, e.g. 1,2,3, etc.

2. a class seating plan with the girls identified by number only, these will be given to the observers.

3. a sharpened HB pencil on the desk of each student and their desk cleared prior to recess dismissal.

4. familiarization with the computer answer sheet.

5. numbered class list of girls and their seating plans will leave the school with the observers (in envelopes provided by the researchers).

6. teacher rated forms, skills-listening, and "Yes, No" forms will be collected by remainder of research group.

We shall have survey results available for your use within a short while and shall forward them to you.

Thanking you for your cooperation in this project realizing fully the inconvenience created and the additional trouble you have gone to in re-scheduling classes.

Yours sincerely,

M. Jean Watt

October 30, 1980

To the Parents/Guardians of students,

Dear Parents/Guardians,

Your children are part of a large group selected to participate in a University of Alberta study of children. The project will record the learning styles of girls and boys in grades four through six. Each student in the study will first be asked to complete a questionnaire which will take approximately 40 minutes; the girls will then complete a second questionnaire, about 20 minutes.

At a later date a smaller group of girls will be chosen at random. These girls will fill in a group questionnaire, taking approximately 15 minutes of their time. This is all that is required.

I shall be happy to supply any further information which you may require concerning this study and may be contacted at 433-1857 after 7:30 p.m.

Dr. Tom Blowers, Director of Research with the Edmonton Public School Board has made the necessary arrangements and given permission for this study to take place, subject to your consent to have your child participate. The findings of this study may help many children across Canada, it would be appreciated if your youngster could participate.

Thank your very much for your cooperation.

Yours sincerely,

J. Watt

CONSENT FORM

NAME _____

SCHOOL _____

My child may participate in this study.

I do not wish my child to participate in this study.

NAME OF PARENT _____

DATE _____

Please ✓ one above and kindly return this form to your child's teacher.

807, 11135 - 83 Avenue,
Edmonton, Alberta
T6G 2C6

November 4, 1980

Dear

I greatly appreciate your assistance in helping me to diagnose various activities which contribute to the development of learning styles in children.

In that regard, you are requested to complete a questionnaire on each female member in your classroom. You're to work independently on this task.

1. Please print the student's names:
   Surname, First Name
   School

2. Please respond to each one of ten questions.

Thank you very much,

Yours sincerely,

M. J. Watt

APPENDIX B

INSTRUMENTS

CONNERS' ABBREVIATED TEACHER RATING SCALE

Child's Name _____

TEACHER'S OBSERVATIONS

Information Obtained _____ By _____
Month Day Year

Please respond to each question

School _____

Observation	Degree of Activity: Not At All 0	Just a Little 1	Pretty Much 2	Very Much 3
1. Restless or overactive				
2. Excitable, impulsive				
3. Disturbs other children				
4. Fails to finish things he starts, short attention span				
5. Constantly fidgeting				
6. Inattentive, easily distracted				
7. Demands must be met immediately--easily frustrated				
8. Cries often and easily				
9. Mood changes quickly and drastically				
10. Temper outbursts, explosive and unpredictable behaviour				

OTHER OBSERVATIONS OF TEACHER (Use reverse side if more space if required).

_____

_____

_____

_____

_____

Items of the Junior Eysenck Personality Questionnaire

IN EVERY QUESTION, MARK JUST ONE BOX. 93

1. Do you like plenty of excitement going on around you? . . . . . YES ☐ NO ☐
2. Are you moody? . . . . . YES ☐ NO ☐
3. Do you enjoy hurting people you like? . . . . . YES ☐ NO ☐
4. Were you ever greedy by helping yourself to more than your share of anything? . . . . YES ☐ NO ☐
5. Do you nearly always have a quick answer when people talk to you? . . . . . YES ☐ NO ☐
6. Do you very easily feel bored? . . . . . YES ☐ NO ☐
7. Would you enjoy practical jokes that could sometimes really hurt people? . . . . . YES ☐ NO ☐
8. Do you always do as you are told at once? . . . . . YES ☐ NO ☐
9. Would you rather be alone instead of meeting other children? . . . . . YES ☐ NO ☐
10. Do ideas run through your head so that you cannot sleep? . . . . . YES ☐ NO ☐
11. Have you ever broken any rules at school? . . . . . YES ☐ NO ☐
12. Would you like other children to be afraid of you? . . . . . YES ☐ NO ☐
13. Are you rather lively? . . . . . YES ☐ NO ☐
14. Do lots of things annoy you? . . . . . YES ☐ NO ☐
15. Would you enjoy cutting up animals in Science class? . . . . . YES ☐ NO ☐
16. Did you ever take anything (even a pin or button) that belonged to someone else? . . . YES ☐ NO ☐
17. Do you have lots of friends? . . . . . YES ☐ NO ☐
18. Do you feel "just miserable" for no good reason? . . . . . YES ☐ NO ☐
19. Do you sometimes like teasing animals? . . . . . YES ☐ NO ☐
20. Did you ever pretend you did not hear when someone was calling you? . . . . . YES ☐ NO ☐
21. Would you like to explore an old haunted castle? . . . . . YES ☐ NO ☐
22. Do you often feel life is very dull? . . . . . YES ☐ NO ☐
23. Do you seem to get into more quarrels and scraps than most children? . . . . . YES ☐ NO ☐
24. Do you always finish your homework before you play? . . . . . YES ☐ NO ☐
25. Do you like doing things where you have to act quickly? . . . . . YES ☐ NO ☐
26. Do you worry about awful things that might happen? . . . . . YES ☐ NO ☐
27. When you hear children using bad language do you try to stop them? . . . . . YES ☐ NO ☐
28. Can you get a party going? . . . . . YES ☐ NO ☐
29. Are you easily hurt when people find things wrong with you or the work you do? . . YES ☐ NO ☐
30. Would it upset you a lot to see a dog that has just been run over? . . . . . YES ☐ NO ☐
31. Do you always say you are sorry when you have been rude? . . . . . YES ☐ NO ☐
32. Is there someone who is trying to get back at you for what they think you did to them? . . YES ☐ NO ☐
33. Do you think water skiing would be fun? . . . . . YES ☐ NO ☐
34. Do you often feel tired for no reason? . . . . . YES ☐ NO ☐
35. Do you rather enjoy teasing other children? . . . . . YES ☐ NO ☐
36. Are you always quiet when older people are talking? . . . . . YES ☐ NO ☐
37. When you make new friends do you usually make the first move? . . . . . YES ☐ NO ☐
38. Are you touchy about some things? . . . . . YES ☐ NO ☐
39. Do you seem to get into a lot of fights? . . . . . YES ☐ NO ☐
40. Have you ever said anything bad or nasty about anyone? . . . . . YES ☐ NO ☐

GO RIGHT ON TO THE NEXT PAGE.

41. Do you like telling jokes or funny stories to your friends? . . . . . YES ☐ NO ☐
42. Are you in more trouble at school than most children? . . . . . YES ☐ NO ☐
43. Do you generally pick up papers and rubbish others throw on the classroom floor? . . . YES ☐ NO ☐
44. Have you many different hobbies and interests? . . . . . YES ☐ NO ☐
45. Are your feelings rather easily hurt? . . . . . YES ☐ NO ☐
46. Do you like playing pranks on others? . . . . . YES ☐ NO ☐
47. Do you always wash before a meal? . . . . . YES ☐ NO ☐
48. Would you rather sit and watch than play at parties? . . . . . YES ☐ NO ☐
49. Do you often feel fed-up? . . . . . YES ☐ NO ☐
50. Is it sometimes rather fun to watch a gang tease or bully a small child? . . . . . YES ☐ NO ☐
51. Are you always quiet in class, even when the teacher is out of the room? . . . . . YES ☐ NO ☐
52. Do you like doing things that are a bit frightening? . . . . . YES ☐ NO ☐
53. Do you sometimes get so restless that you cannot sit still in a chair for long? . . . . . YES ☐ NO ☐
54. Would you like to go to the moon on your own? . . . . . YES ☐ NO ☐
55. At prayers or assembly, do you always sing when the others are singing? . . . . . YES ☐ NO ☐
56. Do you like mixing with other children? . . . . . YES ☐ NO ☐
57. Are your parents far too strict with you? . . . . . YES ☐ NO ☐
58. Would you like parachute jumping? . . . . . YES ☐ NO ☐
59. Do you worry for a long while if you feel you have made a fool of yourself? . . . . . YES ☐ NO ☐
60. Do you always eat everything you are given at meals? . . . . . YES ☐ NO ☐
61. Can you let yourself go and enjoy yourself a lot at a lively party? . . . . . YES ☐ NO ☐
62. Do you sometimes feel life is just not worth living? . . . . . YES ☐ NO ☐
63. Would you feel very sorry for an animal caught in a trap? . . . . . YES ☐ NO ☐
64. Have you ever talked back to your parents? . . . . . YES ☐ NO ☐
65. Do you often make up your mind to do things suddenly? . . . . . YES ☐ NO ☐
66. Does your mind often wander off when you are doing some work? . . . . . YES ☐ NO ☐
67. Do you enjoy diving or jumping into the sea or a pool? . . . . . YES ☐ NO ☐
68. Do you find it hard to get to sleep at night because you are worrying about things? . . . YES ☐ NO ☐
69. Did you ever write or scribble in a school or library book? . . . . . YES ☐ NO ☐
70. Do other people think of you as being very lively? . . . . . YES ☐ NO ☐
71. Do you often feel lonely? . . . . . YES ☐ NO ☐
72. Are you always specially careful with other people's things? . . . . . YES ☐ NO ☐
73. Do you always share all the candy you have? . . . . . YES ☐ NO ☐
74. Do you like going out a lot? . . . . . YES ☐ NO ☐
75. Have you ever cheated at a game? . . . . . YES ☐ NO ☐
76. Do you find it hard to really enjoy yourself at a lively party? . . . . . YES ☐ NO ☐
77. Do you sometimes feel specially cheerful and at other times sad without any good reason . YES ☐ NO ☐
78. Do you throw waste paper on the floor when there is no waste paper basket handy? . . YES ☐ NO ☐
79. Would you call yourself happy-go-lucky? . . . . . YES ☐ NO ☐
80. Do you often need kind friends to cheer you up? . . . . . YES ☐ NO ☐
81. Would you like to drive or ride on a fast motor bike? . . . . . YES ☐ NO ☐

PLEASE CHECK TO SEE THAT YOU HAVE ANSWERED ALL THE QUESTIONS

Items of the Piers-Harris Children's Self Concept Scale

Here are a set of statements. Some of them are true of you and so you will circle the yes. Some are not true of you and so you will circle the no. Answer every question even if some are hard to decide, but do not circle both yes and no. Remember, circle the yes if the statement is generally like you, or circle the no if the statement is generally not like you. There are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

1. My classmates make fun of me . . . . . yes no
2. I am a happy person . . . . . yes no
3. It is hard for me to make friends . . . . . yes no
4. I am often sad . . . . . yes no
5. I am smart . . . . . yes no
6. I am shy . . . . . yes no
7. I get nervous when the teacher calls on me . . . . . yes no
8. My looks bother me . . . . . yes no
9. When I grow up, I will be an important person . . . . . yes no
10. I get worried when we have tests in school. . . . . yes no
11. I am unpopular . . . . . yes no
12. I am well behaved in school . . . . . yes no
13. It is usually my fault when something goes wrong . . . . . yes no
14. I cause trouble to my family . . . . . yes no
15. I am strong . . . . . yes no
16. I have good ideas . . . . . yes no
17. I am an important member of my family . . . . . yes no
18. I usually want my own way . . . . . yes no
19. I am good at making things with my hands . . . . . yes no
20. I give up easily . . . . . yes no

21. I am good in my school work . . . . . yes no
22. I do many bad things . . . . . yes no
23. I can draw well . . . . . yes no
24. I am good in music . . . . . yes no
25. I behave badly at home . . . . . yes no
26. I am slow in finishing my school work . . . . . yes no
27. I am an important member of my class . . . . . yes no
28. I am nervous . . . . . yes no
29. I have pretty eyes . . . . . yes no
30. I can give a good report in front of the class. . . . . yes no
31. In school I am a dreamer . . . . . yes no
32. I pick on my brother(s) and sister(s) . . . . . yes no
33. My friends like my ideas . . . . . yes no
34. I often get into trouble . . . . . yes no
35. I am obedient at home . . . . . yes no
36. I am lucky . . . . . yes no
37. I worry a lot . . . . . yes no
38. My parents expect too much of me . . . . . yes no
39. I like being the way I am . . . . . yes no
40. I feel left out of things . . . . . yes no

41. I have nice hair . . . . . yes no

42. I often volunteer in school . . . . . yes no

43. I wish I were different . . . . . yes no

44. I sleep well at night . . . . . yes no

45. I hate school . . . . . yes no

46. I am among the last to be chosen for games . . . . . yes no

47. I am sick a lot . . . . . yes no

48. I am often mean to other people . . . . . yes no

49. My classmates in school think I have good ideas . . . . . yes no

50. I am unhappy . . . . . yes no

51. I have many friends . . . . . yes no

52. I am cheerful . . . . . yes no

53. I am dumb about most things . . . . . yes no

54. I am good looking . . . . . yes no

55. I have lots of pep . . . . . yes no

56. I get into a lot of fights . . . . . yes no

57. I am popular with boys . . . . . yes no

58. People pick on me . . . . . yes no

59. My family is disappointed in me . . . . . yes no

60. I have a pleasant face . . . . . yes no

61. When I try to make something, everything seems to go wrong . . . . . yes no

62. I am picked on at home . . . . . yes no

63. I am a leader in games and sports . . . . . yes no

64. I am clumsy . . . . . yes no

65. In games and sports, I watch instead of play . . . . . yes no

66. I forget what I learn . . . . . yes no

67. I am easy to get along with . . . . . ves no

68. I lose my temper easily . . . . . yes no

69. I am popular with girls . . . . . yes no

70. I am a good reader . . . . . yes no

71. I would rather work alone than with a group . . . . . yes no

72. I like my brother (sister) . . . . . yes no

73. I have a good figure . . . . . yes no

74. I am often afraid . . . . . yes no

75. I am always dropping or breaking things . . . . . yes no

76. I can be trusted . . . . . yes no

77. I am different from other people . . . . . yes no

78. I think bad thoughts . . . . . yes no

79. I cry easily . . . . . yes no

80. I am a good person . . . . . yes no

Score: _____

APPENDIX C

BEHAVIORAL EVENTS SAMPLE

BEHAVIORAL EVENTS SAMPLE

As an extension to the study, our trained observers were sent into grade 4 and 5 classrooms to score female students' operational behavior while doing school work. As this part of the study fell within the constraints set by another study, only the responses of girls were considered.

We were looking at segmenters and flow-ers. Initially all children (boys and girls) were administered the STEP III Listening and Study Skills Test and their teachers, who were blind to the study, were to score the Conners' Abbreviated Teacher Rating Scale. Following the testing, our trained observers were sent to the classrooms to rate children's operational behavior with school-related tasks. Scoring consisted of completing a behavior rating scale sensitive to the Flow-er, segmenter and sustainer categories and the administration of a timed event sampling procedure. The behavior rating scale was a check list with six categories where the observer rates behaviors in each category on a scale of 0-5. The timed event procedure consisted of observing continuously while marking behavior at 15 second intervals. In the first minute, working in pairs, observers selected four children. In the next two they completed the behavior rating and conducted a timed event sampling in the last. We felt that the observer's speed of decision-making

would enhance the validity and reliability of our methods. Scorer agreement was approximately 55% with the behavior rating scale and 70% with the timed event procedure.

Scorer protocols were divided into flow-ers and segmenters on the basis of the number of points each had. For presentation here ten of each style were randomly selected. Box and whisker graphs (Tukey, 1977) of the behavior rating and timed event measures, the Conners' Abbreviated Teacher Rating Scale, and the STEP III Study/Listening Skills Test are presented. The central box contains scores between the upper and lower quartiles (the middle 50% of the group), and the whiskers extend to the highest and lowest score to give an indication of the range. The median is indicated by the horizontal line located in the box.

In the case of behavior event sampling and timed event sampling the two groups were very different, with all flow-ers having higher scores than all segmenters in both cases. Although there was a substantial overlap on the Conners', the segmenters had a higher median and a much greater range. The two groups were very similar on STEP III listening, but less similar on Study skills where the median flow-er score was approximately equal to the upper quartile of segmenters, indicating a modest degree of discrimination between the two groups. The higher median on the Conners' means that the segmenting children were seen by their teachers as being more hyperactive and less productive in their work. So far

the predictions from theory to practice hold that our flow-ers as a group score differently from the segmenters on the measures employed.

Our methods and the notions prescribing them seems fruitful and the four-minute sampling blitz seems of value.

APPENDIX D

GRAPHS AND ILLUSTRATION

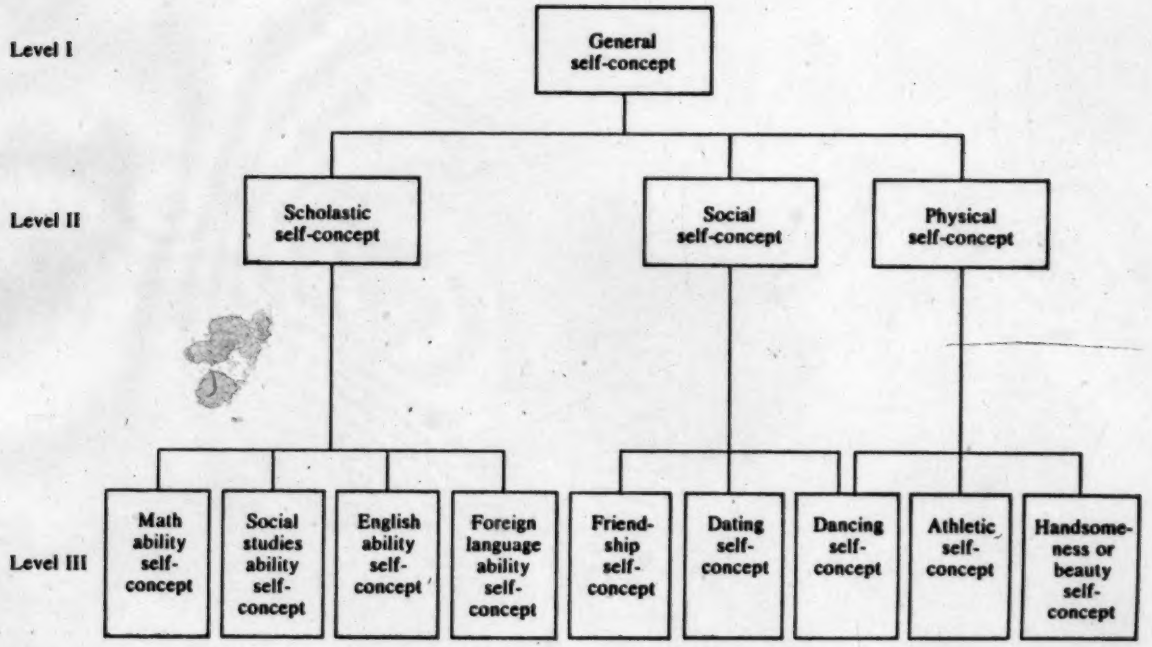

Fig. 1 Three Levels of Self Concept for Student Population (Gage and Berliner, 1975)

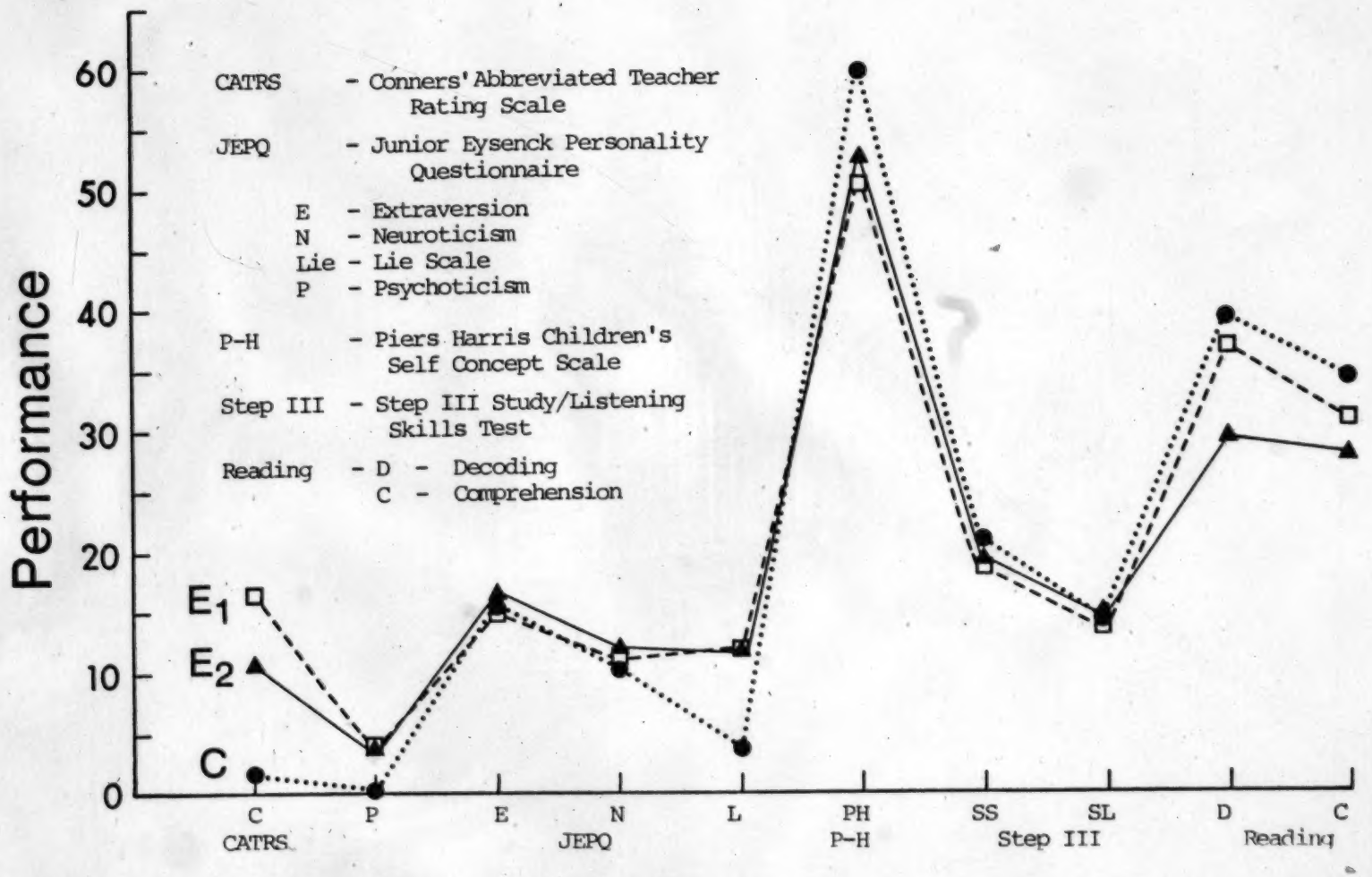

Fig. 2 Relationships Among Mean Scores of the Factors of the Five Selected Assessment Scales Administered to Grade 4 Girls

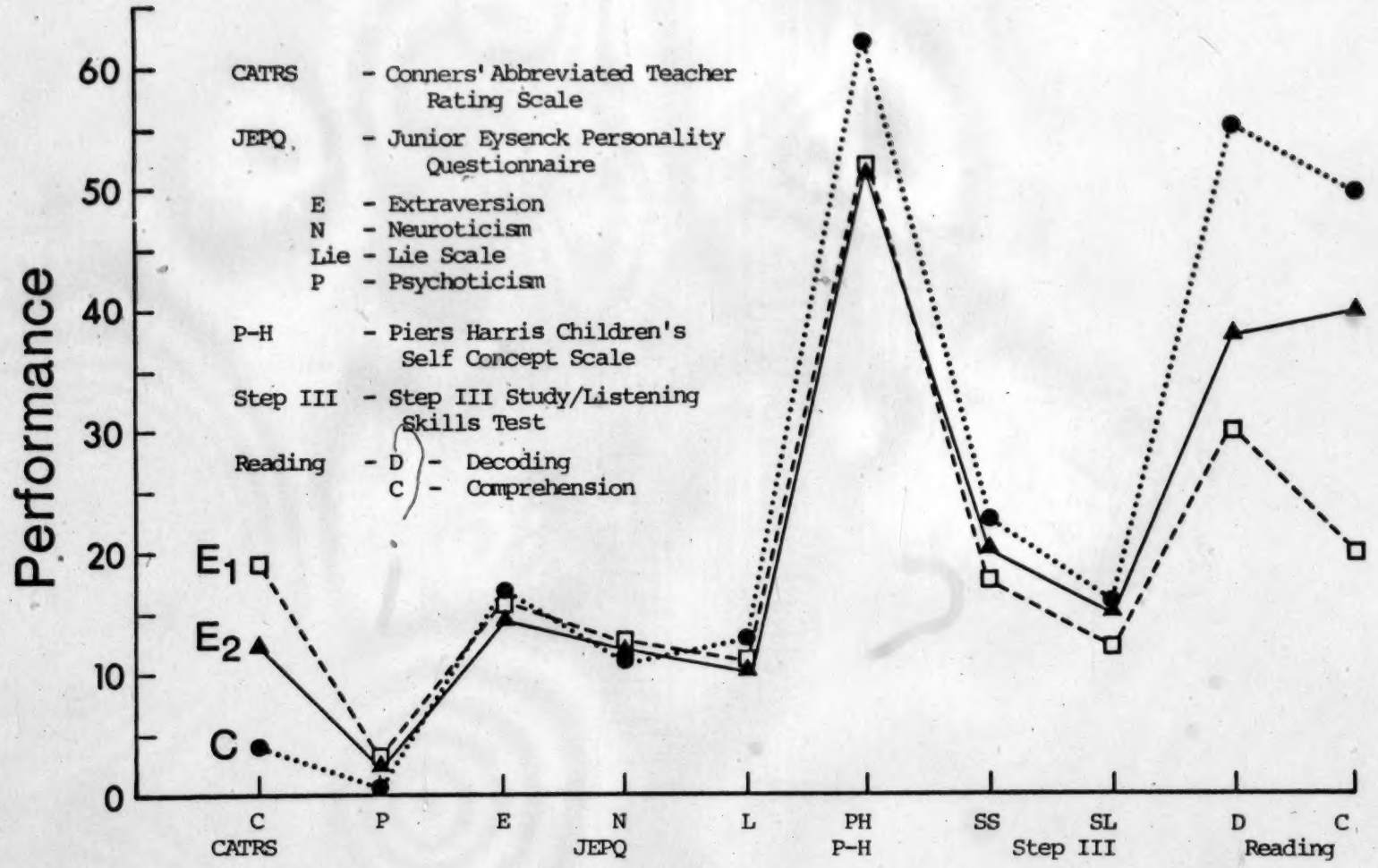

Fig. 3 Relationships Among Mean Scores of the Factors of the Five Selected Assessment Scales Administered to Grade 5 Girls

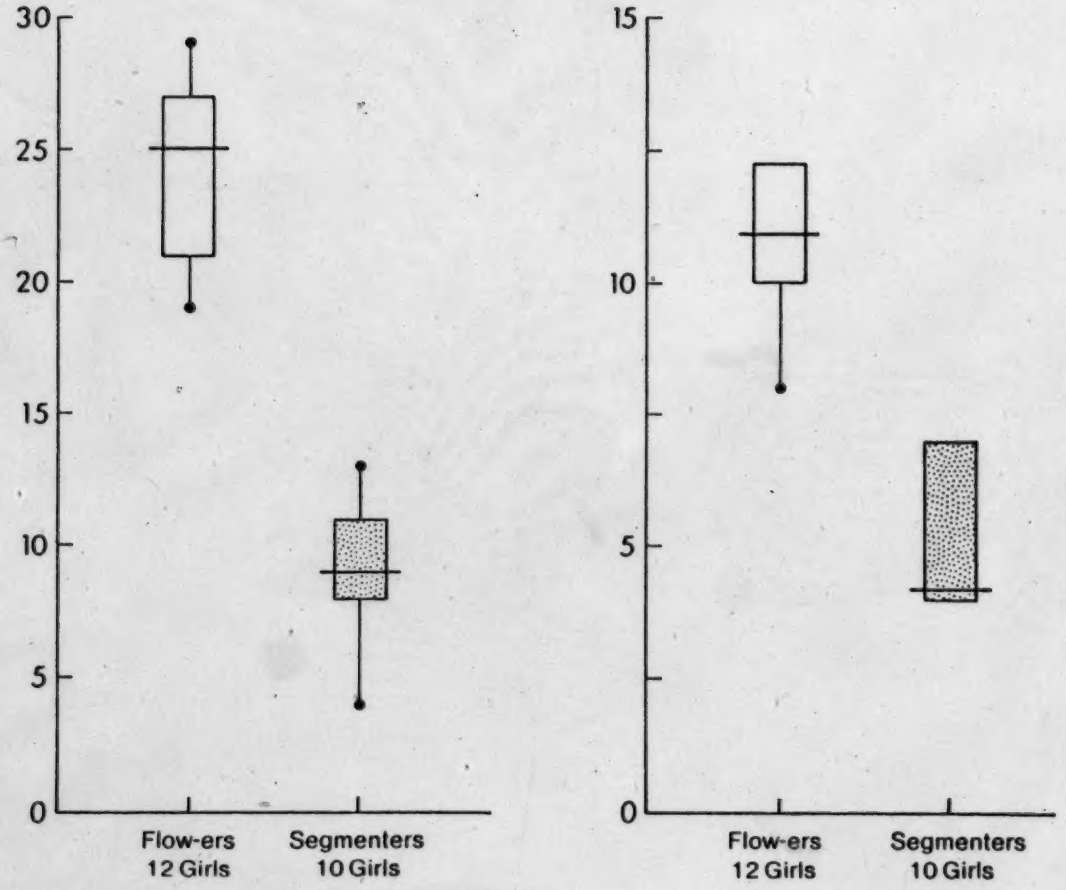

Fig. 4 Behavioral Events, Timed Events, (Flow-ers and Segmenters as Identified by Behavior and Timed Events Procedures (Bishop, 1981)

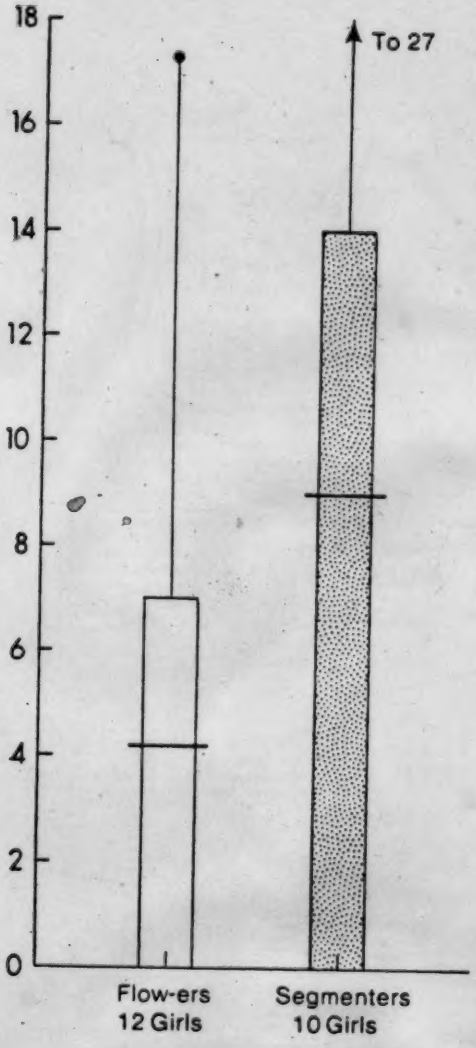

Fig. 5 Conners'Abbreviated Teacher Rating Scale (From observations made using the Behavior and Timed Events Sampling Procedure) (Bishop, 1981)

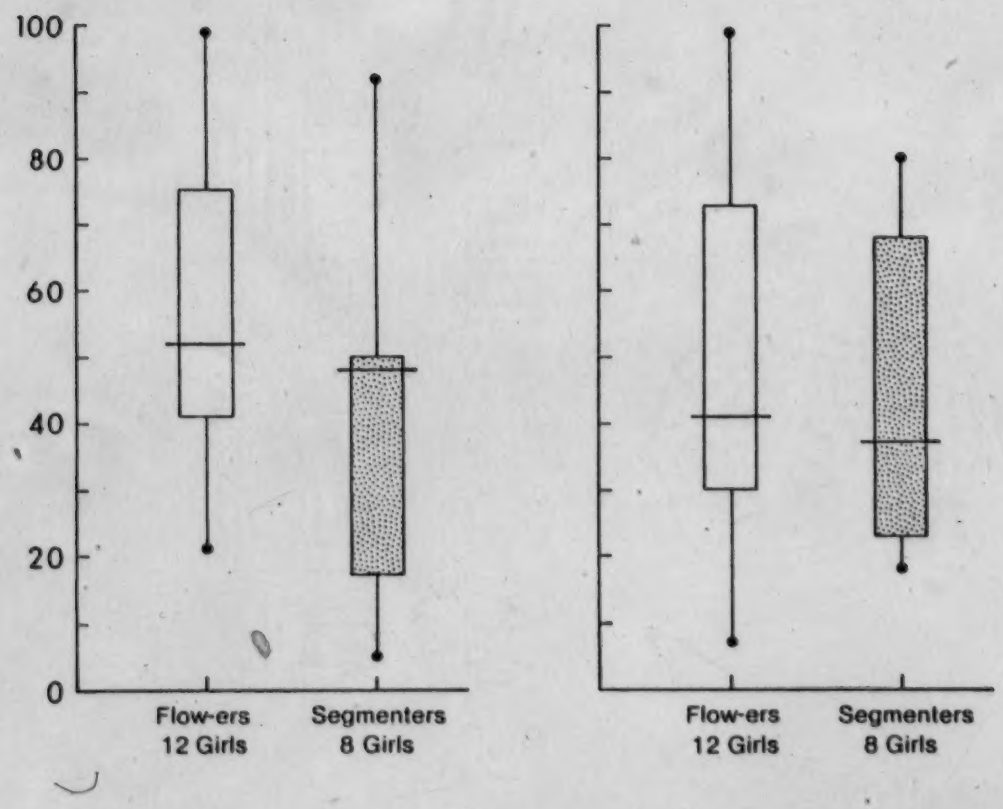

Fig. 6 Step III Study/Listening Test, Percentile Scores (Of the 22 Children Selected by the Behavior and Timed Events Procedures) (Bishop, 1981)

APPENDIX E

CHRONOLOGICAL EVENTS

CHRONOLOGICAL EVENTS

DATE	EVENT
October 28, 1980	Permission obtained to conduct study in Edmonton Public Schools; representative sample drawn from grades four through six comprises 226 girls.
November 4-7, 1980	Tests CATRS, JEPQ, Step III Study/ Listening Skills administered, simultaneous Behavioral and Timed Events observation completed. Test scores tabulated and 56 girls selected on the basis of these results. Groups E_1, E_2 and C formed according to CATRS and JEPQ criteria. Group assignment withheld from researchers.
December 8-9, 1980	Piers-Harris measure administered. Collation, tabulation and data analysis completed.
January 23, 1981	Group assignments identified for experimenter: E_1 N=20, E_2 N=14, C N=22. Written report of study prepared.